Upper Touchet Vegetation Management Project

Fisheries Specialist Report

And

Biological Evaluation

Prepared by:

/s/ William Dowdy
William Dowdy
Fish Biologist

Reviewed by:

/s/ Katherine Ramsey
Katherine Ramsey
Forest Fish Biologist

for:

Walla Walla Ranger District
Umatilla National Forest

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Introduction

The Upper Touchet Vegetation Management Project is located on the Walla Walla District of the Umatilla National Forest. The project consist of treatments on the landscape that will accomplish multiple resource objectives in fuels, vegetation and recreation management. The NEPA analyses area is approximately 4,455 acres of national forest system lands, including 1,597 acres within the special use permit boundary of Ski Bluewood. This project will serve to resolve several critical objectives with goals focusing on protection of life, infrastructure and values at risk within and adjacent to the Bluewood special use permit area by decreasing hazards to recreational users and risk of damage to infrastructure and facilities from wildfires; promote forest health and resiliency by treatments that encourage a desired range of forest species cover type, density and structural stage; decrease the departure from the natural fire regime to create resilient landscapes. Tree thinning, fuels reduction, and prescribed burning are also proposed to reduce susceptibility of the area to intense wildfire, insect and disease. Across the 3,424 acres of vegetation treatment there are planned: 1230 acres of commercial harvest, 666 acres of non-commercial treatments (timber stand improvement and fuels treatments), and 1528 acres of prescribed landscape burning, with construction of approximately 6 miles of temporary roads that will be decommissioned. No mechanical treatments will take place in riparian areas (RHCAs) and no activities are planned in wilderness or Inventoried Roadless Areas (IRAs).

This report evaluates the aquatic species and habitat conditions and discloses the potential direct, indirect and cumulative effects of the alternatives for the Upper Touchet Vegetation Management Project (Upper Touchet Project). The specie(s) and habitats evaluated for this project include: Bull trout {*Salvelinus confluentus)* and their designated critical habitat (DCH), Middle Columbia River steelhead (*Oncorhynchus mykiss)* and their designated critical habitat (DCH), Snake River Basin steelhead (*Oncorhynchus mykiss)* and their designated critical habitat (DCH), Snake River spring/summer Chinook salmon (*Oncorhynchus mykiss)* and their designated critical habitat (DCH), Essential Fish Habitat (EFH), aquatic management indicator species (MIS) and Region 6 Regional Forester Sensitive Species. This report evaluates the effects of the project on Essential Fish Habitat (EFH) as designated by the Magnuson-Stevens Fishery Conservation and Management Act.

The Fish Specialist Report and Biological Evaluation was prepared in accordance with the following guidance and direction:

- Section 7(a)(2) of the Endangered Species Act of 1973 (as amended),
- Magnuson-Stevens Fishery Conservation and Management Act (§ 305(b)) and it's implementing regulations (50CFR § 600).
- National Forest Management Act of 1976
- Clean Water Act of 1972
- Land and Resource Management Plan – Umatilla National Forest (1990) as amended by PACFISH (1995)
- Interior Columbia Basin Ecosystem Management Project (ICBEMP) as directed under ICBEMP memorandum FS agreement No. 03-RMU-11046000-007

Description of Project Alternatives

Three alternatives were developed and analyzed, in detail, in response to public comment and interdisciplinary team member research and knowledge. Alternative A is the Proposed Action, Alternative B addresses no construction of temporary roads, and Alterative D addresses the no cutting within moist forest. Alterative C, no management of moist forest, was determined not to satisfy the Purpose and Need and was dismissed from further analyses. The three action alternatives are summarized below in Table 1.

The table provides summary comparison numbers for silvicultural treatments, fuels treatments, and roads management activities. A description of alternatives can be found below.

Alternative A – Proposed Action

The WWRD proposes to treat approximately 3,120 acres of distinct units with prescribed burning, commercial tree thinning and non-commercial tree thinning with activities phased over 1 to 15 years. Some activities would take place partially within 1480 acres of the Ski Bluewood area with the remaining taking place in an area contiguous to the recreation area boundary to improve defensibility from wildfire from strategic locations. Phases may be combined or treatments applied in a different order if monitoring or experience indicates that such a change would be beneficial to meeting project objectives.

TREATMENT DESCRIPTIONS

Treatments are designed and implemented based on the best available information and protection needs for all related resources and include cutting, burning, and no treatment. Connected actions include felling of trees, erosion control, log haul, road maintenance, use of temporary roads, danger tree removal, and post-harvest fuels treatments. Timber harvest would include the removal of small diameter trees that would be utilized for wood chips, in addition to trees that make saw logs. Units proposed for harvest would primarily utilize ground-based harvest system, with some aerial harvest undertaken. Treatment measures are described in greater detail in the Silviculture report.

Silviculture Prescriptions

Silvicultural prescriptions would be identified for each treatment unit. Prescribed treatments for this project would essentially be cutting, burning of vegetation, or no treatment.

Tree cutting

Tree cutting activity is proposed on 1,590 acres. Non-commercial thinning would occur on 440 acres within units containing trees of small diameter. Commercial thinning would occur on approximately 1,150 acres in larger diameter trees.

LOGGING SYSTEMS

Ground-based logging

Tractor/skidder yarding would occur on trails spaced approximately 100 feet apart. With skidders required to remain on the trails and logs dragged to the landings with one end suspended.

Harvester/forwarder equipment would cut trees and place them adjacent to the forwarder routes. Limbs are left on the forwarder route to aid in soil protection. The forwarder picks up logs, places them in piles and hauls them to a landing for decking (stacking). This is a total log suspension harvest system. Forwarder route spacing would be based on the reach of the felling equipment—typically 50 feet.

Skyline logging

Configurations include: Fixed tower yarder, crane-type swing yarder, and loader or excaliner. In addition to the yarder, a loader is frequently used to move logs from the yarder to a landing site or to load logs directly onto trucks. A processor may also be at the landing site to process trees yarded with limbs and tops attached.

Yarding systems that utilize helicopters

Operations would be conducted by felling, limbing, and topping trees by hand (chainsaw) within treatment units, then lifting 1 or more trees by cables for transport by helicopter to a large landing.

Landings

Landings would be created at approximately half an acre to one acre in size and would be large enough to pile tops for later burning in piles. Forwarder landings may not be constructed because logs would be decked along the edge of roads without removing vegetation, where feasible. The landing area used for helicopter yarding would likely be the ski area parking lot. Large landings that create substantial amounts of bare soil would be replanted to native grasses and forbs.

FUELS TREATMENTS

One or more of the following activities will accompany thinning to reduce activity fuels:

Whole Tree Yarding

The whole tree would be skidded to a landing where it would be processed and all harvest residues (slash) would be piled. Landing piles would generally be large in size averaging 20 feet in height.

Yarding Top Attached

Tops would be left attached to top-logs yarded or helicoptered to the landing and piled after being severed from the attached log. This material may be utilized for biomass products or burned in the pile.

Jackpot Burning

This treatment would utilize spot ignitions to reduce or eliminate relatively heavy slash concentrations. This treatment would be applied in units where the fuelbed is discontinuous and fire spread through the unit would be limited. This burning would be conducted by hand with drip-torches.

Broadcast and Underburning

Low-intensity prescribed fire would be applied to a broad area using hand-operated drip torches. This method would be used to favor early seral, fire resistant species composition and structure while reducing surface and ladder fuels. Under burning would be used to reduce activity and natural fuels in harvest units to reduce activity slash and create regeneration/planting spots.

Piling = Grapling

This is a mechanical treatment that lifts forest fuels and lays them in piles. Both naturally occurring woody debris and activity generated fuels would be piled. Chain saws may be used to compact material in piles and throughout the unit and to cut logs in lengths that are more easily piled. Pile sizes would vary, but are not expected to exceed 10 feet in height.

Piling – Hand

Piling fuels by hand would occur near riparian areas, steep slopes, where aesthetic values are important, or where resource values requires a low-impact treatment method. Chain saws may be used to compact material in the pile and pile size would vary.

Pile Burning

Burning of fuel piles under conditions when the threat of fire spreading from the pile location would be low. Piles would be lit by hand using drip torches. Pile construction specifications would ensure that pile burning would result in minimal damage to residual trees in the stand.

Fell Damaged Residuals

Non-commercial trees damaged in the logging process shall be felled, lopped and scattered.

Lop and Scatter

In areas where non-merchantable tops and limbs would be left, boles would be cut to less than six feet in length and limbs would be severed from the bole and scattered to prevent fuel bed depth from exceeding two feet in depth.

LANDSCAPE PRESCRIBED FIRE

Landscape prescribed fire would be applied across approximately 1,530 acres within Upper Touchet planning area in all alternatives. This treatment would reintroduce fire within the project area's low severity and mixed severity (Fire Regime I, II and III) fire-dependent ecosystems. To apply prescribed fire at the landscape level effectively the use of hand ignition and aerial ignition devices will be used to achieve desired fire effects. Hand fire-lines and roads will be used to control fire spread. Chainsaws would be used to cut overhanging brush, ladder fuels, large logs and hazardous dead trees on containment lines. Surface fuels from the base of large trees will be pulled back where feasible to reduce mortality. The prescribed fire would take place in the spring or fall when weather and fuel moisture conditions are conducive to meeting resource objectives. The larger area can also be turned into multiple units to better control effects and aid in implementation.

DANGER/HAZARD TREE REMOVAL

Danger and/or hazard trees would be felled and removed along all haul routes used for timber sale activity, as well as around trailheads, groomed ski runs, ski area facilities, and communication equipment sites. Trees with an imminent failure potential and those deemed likely to fail within a 5-10 year period would be felled along open system roads. Only danger trees with an imminent failure potential would be felled on closed system roads.

Along open system roadways and groomed ski runs within the project area, trees would be evaluated in accordance with the Field Guide for Danger Tree Identification and Response, Pacific Northwest Region, 2008. Trees in and around a known human or facility "target" (e.g. trailheads, ski lift corridors, ski area buildings, communication facilities) would be evaluated in the context of Long Range Planning for Developed Sites in the Pacific Northwest: The Context of Hazard Tree Management, Pacific Northwest Region, 1992. If considered economically feasible, danger trees would be sold as part of a timber sale. Danger trees within Riparian Habitat Conservation Areas (RHCAs) would be felled and left to provide additional coarse woody debris.

EROSION CONTROL

Any exposed soil caused from landing activities, harvest operations, or burning of slash would be revegetated with native plants and/or is expected to naturally revegetate.

ROADS MANAGEMENT

To accomplish proposed activities, approximately 24 miles of open system roads and 9 miles of closed system roads (operational maintenance level 1), would be used as haul routes on NFS lands. Closed system roads used for project activities would not be opened to the public during project activities. All system roads would remain the same after project implementation; closed roads would continue to be closed, and open roads would continue to be open with pre-existing designations.

Material sources

There are two existing material sources that would be utilized for this proposed action. One is located at Chase Mountain on the 6437 road and the other at Griffin Peak on the 6436 road.

Road maintenance

Road maintenance may be needed to make roads accessible and safe for use during project implementation, and to protect water quality and aquatic resources. It may consist of a variety of activities including surface rock replacement, spot surfacing, roadside brushing, erosion control, logging out, road surface blading, ditch cleanout, slide removal, dust abatement, culvert cleaning or replacement, danger tree removal and other actions that contribute to the preservation of the existing road and its safe use.

Temporary roads

Construction of temporary road spurs would be needed to access multiple units which are not directly adjacent to open or closed (system roads. Temporary roads fall under two categories 1) newly constructed temporary roads or 2) temporary roads that would be constructed using an existing template, such as a decommissioned road, old skid trails, or unauthorized routes. Temporary roads would be obliterated after project implementation (Forest Plan p. 4-85).

Closed roads re-opened for haul with reconstruction

Forest system roads that are identified as closed, or in storage status (Maintenance Level 1) would be needed to access units. These roads would be temporarily re-opened for use during implementation. Actions needed to re-open these roads may include blading, installation of drainage features or culverts, hardening of soft spots, and brushing. These roads would be restored and returned to closed status after project implementation.

Permitted Routes

Specific sections of administratively open roads within the Ski Bluewood SUP area, designated as Permitted Routes, would be used for haul routes during implementation of the proposed project.

Alternative B: Modified Proposed Action - No Temporary Roads

Alternative B was developed in response to comments received during scoping expressing a desire to minimize or eliminate the construction and/or use of temporary roads associated with implementing the proposed action. Units included in Alternative A, requiring temporary road access, as well as the proposed temporary roads themselves, were modified to create Alternative B.

Treatments in Alternative B are the same as Alternative A, except that more aerial- logging would be used to access and remove trees that are inaccessible from existing roads. Approximately 7 miles of existing

system roads would be used for log hauling. Tree cutting activity is proposed on the same 1,590 acres, and prescribed fire on the same 1,530 acres as Alternative A. There would be less need for danger tree removal because fewer roads would be involved. Treatments would be phased over 1-15 years the same as Alternative A.

TREATMENT DESCRIPTIONS

Treatments for Alternative B would be the same as for those described in Alternative A above.

Logging Systems

While skyline methods are primarily proposed, more helicopter logging methods would be used to accomplish the goals of this Alternative than A, given the elimination of temporary road construction or use.

Alternative D: Modified Proposed Action - Cutting of Large Trees

Alternative D was developed in response to public comments that we should not limit harvest to trees less than or equal to 21 inches DBH. This alternative allows cutting grand fir trees up to 30 inches DBH where appropriate to improve tree species composition and stand resiliency. It is expected that some grand fir trees of this size range would remain, and all grand fir trees over 30 inches DBH would remain. Trees over 30 inches would be retained for their wildlife habitat value and aesthetic value in the ski area and viewshed. In addition, all other tree species over 21 inches DBH would remain.

Most likely, larger fir trees up to 30 inches DBH would be removed from within old forest multistory stands in the grand fir and spruce cover types (450 acres). These stands would remain old forest structure, but convert to old forest single story in a slightly different manner than in Alternatives A and B. This allows more flexibility in determining how to best thin each stand.

Overall, Alternative D has the most skyline logging proposed and the least amount of helicopter logging and affects 20 fewer acres in the project area than Alternatives A and B Based on field reviews, some units originally identified were expanded, some were dropped, and two were added. Some non-commercial prescriptions shifted to commercial to remove some trees over 5 inches DBH of less-desired tree species or tree quality. Treatments would occur over 1-15 years the same as Alternative A and B.

TREATMENT DESCRIPTIONS

Prescribed burn and silvicultural treatments within units would be the same as described for Alternatives A and B, except for the option to remove some larger grand fir trees.

Alternatives Considered and Dismissed

Alternative C – Modified Proposed Action with No Construction of Temporary Roads or Cutting in Moist Forest

A concern regarding avoidance of tree-cutting activities in moist forest was identified. This option was evaluated and dismissed from detailed environmental effects analysis because it did not meet the purpose and need for the project after 95% of the units proposed for treatment were eliminated. Additionally, the landscape prescribed fire would not be implementable under alternative C as there is no feasible way to separate moist forest as it is intermixed throughout the treatment area. Control lines would be difficult to build and to hold fire within due to location on slope and the irregular shape of excluded areas. The

deciding official determined that it is unlikely that the scope and scale of the activities within Alternative C would have much of an effect on conditions requiring action within the project area.

Alternatives Summary

Three action alternatives (A, B, and D) were analyzed in this report. Alternative A is nearly identical to the proposed action presented for scoping, and Alternatives B and D were developed to meet the Project purpose and need while addressing public comments.

Table 1. Comparison of Activities by Alternative

Activity	Alternative		
	A	B	D
Silvicultural Treatments (Acres)			
Commercial thinning and improvement cutting	1150	1150	1205
Non-commercial thinning	440	440	365
Landscape prescribed fire	1530	1530	1530
Total	3120	3120	3100
Cutting/Harvest System (Acres)			
Conventional ground-based	180	200	300
Helicopter	170	390	75
Skyline	800	560	830
Transportation and Access (Miles)			
Maintenance Level 1 roads used for haul	9.2	7.5	8.1
Maintenance Level 2 roads used for haul	5.0	4.0	4.6
Maintenance Level 3-4 roads used for haul	19.8	19.8	24.0
Maintenance Level 5 roads used for haul	7.6	7.6	7.6
Newly constructed temporary roads	1.05	0	1.0
Temporary roads constructed on existing template	.24	0	3.7
Permitted Routes within SUP area used for haul	1.24	0.9	1.9
Total Project Road Miles	42.8	41.8	50.1

Summary of Effects

Summary of Effects to Aquatic Species and Habitats

Table 2 shows the determinations of effects for the Upper Touchet Vegetation Management Project on ESA listed and sensitive fisheries and aquatic species. Effects were determined based on the type and location of proposed activity.

Silvicultural treatments, prescribed burning, road management and associated activities, are determined to have No Effect on ESA listed fish species and their DCH; No Impact for R6 Regional Forester sensitive aquatic species; No alternatives would result in any direct, indirect or cumulative population level impacts nor a negative habitat trend at either the watershed or Forest scale for aquatic management indicator species (MIS).

Discussions on direct, indirect, and cumulative effects leading to determination of effects begins on page 36 of this report.

Table 2. Summary of Effects by Alternative

Effects Determinations[1] by Alternative			
Species	**Alternative A**	**Alternative B**	**Alternative D**
Mid-Columbia River Steelhead and their Designated Critical Habitat (DCH)	NE	NE	NE
Bull trout and DCH	NE	NE	NE
Essential Fish Habitat (EFH)	NE	NE	NE
Snake River Basin steelhead and their Designated Critical Habitat (DCH)	NE	NE	NE
Snake River Spring Chinook salmon and their Designated Critical Habitat (DCH)	NE	NE	NE
Interior Columbia Basin Redband trout	NI	NI	NI
Margined sculpin	NI	NI	NI
Pacific Lamprey	NI	NI	NI

1 NE = No Effect; MA-NLAA = May Affect, Not Likely to Adversely Affect Individuals; NI = No Impact to individuals or their habitat; LAA = Likely to Adversely Affect; NAA = Will Not Adversely Affect; MAA = May Adversely Affect.

Scale of Analysis and Affected Environment

The proposed Upper Touchet Project is located in the headwaters of the Upper North Fork Touchet River subwatershed (HUC 170701020301), Wolf Fork subwatershed (HUC 170701020303), Beaver Creek subwatershed (HUC 170601060304), North Fork Wenaha River subwatershed (HUC 170601060303) and West Fork Butte Creek subwatershed (HUC 170601060306). The Upper NF Touchet River and Wolf Fork subwatersheds are part of the Upper Touchet River Watershed (HUC 1707010203) and the Beaver Creek, NF Wenaha River and West Fork Butte Creek subwatersheds are part of the Wenaha River Watershed (HUC 1706010603).

The Upper Touchet River Watershed is part of the Walla Walla Sub-basin and the Mid-Columbia Basin. The Wenaha River Watershed is part of the Lower Grande Ronde Sub-basin and the Lower Snake Basin. The combined watershed areas are approximately 335,826 acres, of which 214,513 acres (64 percent) are managed by the US Forest Service (USFS). See Table 3.

The Upper Touchet River Watershed will be the analysis area for cumulative effects on Mid-Columbia River steelhead and their Designated Critical Habitat. The Wenaha River Watershed will be the analysis area for cumulative effects on Snake River Basin steelhead, Snake River Spring Chinook salmon and their respective Designated Critical Habitats.

The same Upper Touchet River and Wenaha River watersheds will be the analysis area for the cumulative effects on both Bull trout and their Designated Critical Habitat and Essential Fish Habitat for salmon.

The Wenaha River Watershed will not be used for analysis of cumulative effects on aquatic species for the following reasons. There are only 147 acres of the Upper Touchet Project area within the Wenaha River Watershed and approximately 87.5 acres are associated with proposed activities. There are no streams, ponds, wetlands or RHCAs associated with those acres. There are no aquatic species associated with the project acres in the Wenaha River watershed to be affected. Therefore, the Upper Touchet Project will have no direct or indirect effects to aquatic species or their habitats within the Wenaha River watershed. Without direct or indirect effects occurring, there can be no cumulative effects. Table 4 shows acreage of the Upper Touchet Project area within each watershed.

Table 3. Management of Watersheds affected by the Upper Touchet Project

Manager	Acres	Percent
US Forest Service	214,513	64%
Other (BLM, Private and State)	121,313	36%
Total	335,826	100%

Table 4. Project Area acreage within each Watershed

Watershed Name (HUC)	Watershed Size (acres)	Project Area Acres in Watershed	% Watershed within Project Boundary
Upper Touchet River (HUC 1707010203)	146,706	4,306	2.9
Wenaha River (HUC 1706010603)	189,120	147	< 0.1

TES and MIS Aquatic Life Histories

Threatened, Endangered and Sensitive (TES) Fish and Habitat

Mid-Columbia River steelhead, Snake River Basin steelhead, Snake River Spring Chinook salmon and Bull trout and their respective designated critical habitats are the only aquatic species and habitats listed under the Endangered Species Act (ESA) found in or adjacent to the project area. Essential Fish Habitat for Salmon, as described in the federal Magnuson-Stevens Act (MSA), is also found in or adjacent to the project area.

Mid-Columbia River steelhead, Snake River Basin steelhead and their Designated Critical Habitats

Wild steelhead are the anadromous form of native resident Rainbow trout (aka Redband trout) and can be found within the analysis area. Redband trout and steelhead are indistinguishable visually as juveniles.

Steelhead rear in freshwater streams for their first 1 to 3 years prior to smolting. They then migrate to the ocean where they can spend up to 3 years before returning to their native freshwater stream to spawn. Unlike Pacific salmon, steelhead are iteroparous, meaning they do not necessarily die after spawning and are able to spawn more than once, although this varies among runs.

Steelhead in the analysis area display a broad life history pattern of spawn timing typically called summer-run. Steelhead spawning occurs between March and May. Prior to spawning, maturing adults hold in pools or in side channels to avoid high winter flows. Typically, they spawn in stream reaches with a moderate to high gradient. Fry typically emerge between April and June. Migration to the ocean typically occurs at age 2 for wild summer steelhead, while most hatchery smolts migrate at age 1 (Carmichael and Taylor, 2010).

The steelhead populations utilizing the Upper Touchet Project area is part of two separate Distinct Population Segments (DPS). The Touchet Population within Umatilla/Walla Walla Major Population Group (MPG), within the Mid-Columbia River Steelhead DPS and the Grande Ronde River, Lower Mainstem Population within the Grande Ronde River Major Population Group (MPG), within the Snake River Basin Steelhead DPS. Figure 1 shows the Steelhead distribution within and adjacent to the Upper Touchet project area (Appendix B). Table 5 shows how many miles of streams are occupied by steelhead within each watershed and in the project area.

Table 5. Miles of stream occupied by steelhead within the watershed and the project area

Distinct Population Segment (DPS)	Watershed		Upper Touchet Project Area
	Upper Touchet River	Wenaha River	
Mid-Columbia River steelhead	105.1	-	0.0
Snake River Basin steelhead	-	91.7	0.0

Designated critical habitat for Mid-Columbia River Steelhead and Snake River Basin Steelhead includes all rivers and stream reaches accessible to steelhead below long-standing natural barriers (*Federal Register* Vol. 70 (52630); September 2, 2005). There are approximately 0.6 miles of Designated Critical Habitat for Mid-Columbia River Steelhead within the project area. There is no Designated Critical Habitat for Snake River Basin Steelhead within the project area. Figure 2 shows Steelhead DCH within each watershed and adjacent to the Upper Touchet Project (Appendix B).

Snake River Spring Chinook salmon and their Designated Critical Habitat

Chinook salmon are anadromous, living part of their life in salt water while breeding in fresh water; and semelparous, reproducing only once in a lifetime. Biologists recognize different seasonal (i.e., spring, summer, fall, or winter) "races" or “runs” in the Chinook salmon migration from the ocean to fresh water.

Spring/summer-run Chinook salmon from the Snake River basin exhibit stream-type life history characteristics. The spring-run Chinook salmon return to the Columbia River from the ocean in early spring and pass Bonneville Dam beginning in early March and ending the first week of June. The summer-run Chinook salmon return to the Columbia River from June through August. Returning fish hold in deep mainstem and tributary pools until late summer, when they emigrate up into tributary areas and spawn. In general, Snake River Basin spring-run Chinook salmon tend to spawn in higher-elevation reaches of major Snake River tributaries in mid- through late August. Snake River Basin summer-run Chinook salmon spawn approximately one month later than spring-run fish and tend to spawn lower in the Snake River Basin drainages, although their spawning areas often overlap with spring-run spawners.

The stream-type life history may be adapted to select spawning and rearing areas that are consistently productive with limited susceptibility to dramatic changes in water flow. The eggs that Snake River spring and summer Chinook salmon deposit in late summer and early fall incubate over the following winter, and hatch in late winter and early spring of the following year. Juveniles rear through the summer, overwinter, and typically migrate to sea in the spring of their second year of life, although some juveniles

may spend an additional year in fresh water. Depending on the tributary and the specific habitat conditions, juveniles may migrate extensively from natal reaches into alternative summer-rearing or overwintering areas. Most of the fish spend two or three years in the ocean before returning to tributary spawning grounds primarily as 4- and 5-year-old fish. A small fraction of the fish spend only one year in the ocean and return as 3-year-old "jacks," heavily predominated by males (Good et al. 2005).

The Snake River spring/summer Chinook salmon was listed as Threatened under the Endangered Species Act on April 22, 1992 (50 FR 37160). Critical habitat was designated for Snake River spring/summer Chinook salmon on December 28, 1993 (58 FR 68543) and revised October 25 of 1999 (64 FR 57399). Although Designated Critical Habitat is not mapped for Snake River Spring/Summer Chinook salmon, it is described in the narrative or rule 64 FR 57399. Critical Habitat includes those waters that are accessible upstream of occupied habitat. These listings decisions were reaffirmed in 2005 (Good et al. 2005; 50 FR 37160).

Snake River spring/summer Chinook salmon are found downstream of the Upper Touchet Project boundary. They are known to occupy approximately 83 miles of the Upper Touchet River and Wenaha River Watersheds. Figure 3 shows the spring/summer Chinook salmon distribution within and adjacent to the Upper Touchet project area (Appendix B).

Bull trout and their critical habitat

Bull trout (Salvelinus confluentus) are members of the Salmonidae family. They are often referred to as char, which is the common name for members of the genus *Salvelinus*.

In general, bull trout are a cold water species that inhabits Pacific slope drainages from northern California through British Columbia to extreme southeastern Alaska (Meehan and Bjornn 1991). Natural climactic warming and loss of cold water habitats since the Pleistocene period exacerbated by effects of human activities have reduced their distribution (Cavender 1978).

GIS databases show Bull trout are known to occur in approximately 137.9 miles of streams in the Upper Touchet River and Wenaha River watersheds and presumed to occur in additional 7.9 miles (See Figure 4). Many of those known occupied streams, approximately 137.6 miles, are listed as Designated Critical Habitat (DCH) by the U.S. Fish and Wildlife Service. Bull trout are known to occupy approximately 1.8 mile of streams within the Project boundary. Additionally, those same streams are listed as Designated Critical Habitat (Appendix B).

Essential Fish Habitat

The federal Magnuson-Stevens Act (MSA) requires analysis for effects to Essential Fish Habitat (EFH) specifically for Pacific salmon. Amendment 18, of the Pacific salmon Fisheries Management Plan, revises the description and identification of EFH for Pacific salmon managed under the FMP. The geographic extent of salmon freshwater EFH is described as all water bodies currently or historically occupied by Council-managed salmon within the USGS 8th field hydrologic unit codes (HUC). Chinook salmon EFH includes all habitat currently or historically occupied within Washington, Oregon, Idaho, and California. Coho salmon EFH includes all habitats currently or historically occupied within Washington, Oregon, and California.

Freshwater EFH for both Chinook salmon and Coho salmon consists of four major components:

1. spawning and incubation
2. juvenile rearing

3. juvenile migration corridors
4. adult migration corridors and holding habitat

Freshwater EFH depends on lateral (e.g., floodplain, riparian), vertical (e.g., hyporheic) and longitudinal connectivity to create habitat conditions for spawning, rearing, and migration including:

- water quality (e.g., dissolved oxygen, nutrients, temperature, etc.)
- water quantity, depth, and velocity
- riparian-stream-marine energy exchanges
- channel gradient and stability
- prey availability
- cover and habitat complexity (e.g., LWD, pools, aquatic and terrestrial vegetation, etc.)
- space
- habitat connectivity from headwaters to the ocean (e.g., dispersal corridors)
- groundwater-stream interactions
- substrate composition.

The Upper Touchet project area falls within two HUC 8 hydrologic unit boundaries (Walla Walla Subbasin and Lower Grande Ronde Subbasin). The Lower Grande Ronde Subbasin is the only one identified in the Pacific salmon Fisheries Management Plan as **EFH** and contains EFH for Chinook and Coho salmon (see Figure 6 in Appendix B)**.**

There are only 147 acres of the Upper Touchet project area within the Lower Grande Ronde Subbasin and only 34.5 to 87.5 acres are within proposed activity units, depending on alternative. There are no streams, RHCAs, fish or other components described in the paragraphs above that meet the criteria to justify calling any of those acres EFH. It is my professional judgement, based on the rationale provided above, that this project will not affect, directly or indirectly, EFH for salmon.

Management Indicator Species (MIS)

The Umatilla National Forest Land and Resource Management Plan (Forest Plan) designated Steelhead trout (anadromous) and resident rainbow trout (aka Redband trout) as its aquatic Management Indicators Species (MIS). The Forest Plan was amended in 1995 by PACFISH which incorporated standards and guides to allow for near-natural rates of habitat restoration, and avoid adverse effects to listed species and their Designated Critical Habitats. Stream surveys and broad scale monitoring efforts (PACFISH/INFISH Biological Opinion("PIBO")) are in place to collect data and monitor habitat conditions.

Redband/Rainbow Trout

Interior Columbia Basin redband trout are a resident subspecies of Oncorhynchus mykiss found east of the Cascade Mountains in Oregon and Washington, in northern California, and in eastern British Columbia. Behnke (1979) noted two main evolutionary lines of the species dating back to the Pleistocene; the coastal rainbow trout west of the Cascades and the inland Columbia Basin redband trout east of the Cascades. Both of these evolutionary lines include steelhead populations of their respective areas. They are currently recognized as being two separate subspecies, with the natural break between them being the Cascades Mountains in Oregon.

Hatchery rainbow trout stocked for sport fisheries are typically produced from the coastal subspecies *(Oncorhynchus mykiss irideus*), and had been stocked in analysis area waters in earlier decades, but hatchery stocking in free-flowing streams has been discontinued in recent years. Absent genetic analyses

to show dominant hatchery genetics, all resident O. mykiss in the analysis area are presumed to be *O. mykiss gairdneri*/interior Columbia Basin redband trout, particularly since the two subspecies display different patterns of coloration. Genetically pure populations of redband can generally be found isolated above migratory barriers where stocking has not occurred (Behnke 1979).

Redband trout require stream and riparian habitat conditions in the area favorable to spawning and rearing. Factors concerning their habitats include water temperature, water quality, timing and quantity of peak stream flows, and physical in-stream and riparian habitat characteristics. Good water quality is essential for spawning and rearing. Redband require similar in-stream habitat characteristics as other cool-water salmonids. A variety of habitat types are important in providing adequate habitats for all life stages.

GIS data show Redband/rainbow trout are present in approximately 156.3 miles of streams within the Upper Touchet River and Wenaha River Watersheds. Of those occupied streams, 15.2 miles are above physical barriers. Redband trout are present in approximately 1.1 miles of stream within the Upper Touchet project area (Appendix B).

Steelhead Trout

This specie was previously discussed under the TES and MIS Aquatic Life Histories section. For information on the steelhead trout see page 13.

Regional Forester's Sensitive Aquatic Invertebrate and Vertebrate Species

A number of sensitive aquatic invertebrate and vertebrate species are known or suspected to occur within or adjacent to the Upper Touchet Project area (Table 6). Descriptions of species and their life histories can be found beginning on page 18.

Table 6. Regional Forester's Sensitive Aquatic Species within or adjacent to the Upper Touchet Project

Regional Forester's Sensitive Aquatic Species	Habitat Description	Habitat Present in Analysis Area	Species Present in Analysis Area	Known Current Distribution
Pacific Lamprey *(Entosphenus tridentatus)*	Occur in streams of all sizes of low to mid-elevation watersheds. Common in stable stream reaches, tolerant of fine sediments and occupy depositional areas.	Habitat likely present in the NF Touchet River, Spangler Creek and Jim Creek.	Present within the watersheds. None have been documented during stream surveys or project field visits. Historically, individuals were known to spawn in the NF Touchet and SF Touchet Rivers.	From the Alaska Aleutians to Baja California and inland to central Idaho. Historically they were found in all major river systems where salmon and steelhead occurred.
Margined Sculpin *(Cottus marginatus)*	Primarily a pool dweller in streams, it is normally found in water temperatures less than 20°C.	Habitat is present throughout the NF Touchet River	Yes, the species has been documented in the watershed and is known to occur in streams within and adjacent to the Project area.	The species is found only in SE Washington and NE Oregon. In Washington, it occurs only in the Tucannon River and Walla Walla River drainages.

Interior Columbia Basin redband trout *(Oncorhynchus mykiss gairdneri)*	Cold clear, water, high mountain streams with variable habitat complexity	Habitat is present throughout the NF Touchet River	Yes, the species has been documented in the watershed and is known to occur in streams within and adjacent to the Project area.	Found east of the Cascade Mountains in Oregon and Washington, in northern California, and in eastern British Columbia.

Pacific Lamprey

Lamprey are a unique group of fishes in the order Petromyzontiformes, first recognized by fossil records in the Carboniferous Period some 360 million years ago. Pacific lamprey *Entosphenus tridentatus* is one of several species of lamprey found in the Pacific Northwest.

The distribution of Pacific lamprey in North America is from the Alaska Aleutians to Baja California and inland to central Idaho. Historically they were found in all major river systems where salmon and steelhead occurred including the Snake, Salmon, and Clearwater rivers in Idaho. The limit of upstream migration in the Snake River was documented near Lower Salmon Falls by early naturalists (Moser and Close, 2003).

Historically, Pacific lamprey were known to spawn in the North Fork and South Fork Touchet Rivers. It is currently unknown how many Pacific lamprey return each year to spawn in those streams. There have not been any Pacific lamprey spawning within or adjacent to the Upper Touchet Project. A map of historic distribution of the Pacific lamprey can be found in Appendix B.

Margined Sculpin

The margined sculpin is a small (2.5 in) native freshwater fish found only in southeastern Washington and northeastern Oregon (Mongillo and Hallock 1998, Wydoski and Whitney 2003). In Washington, it occurs only in the Tucannon and Walla Walla River drainages. The historical range of the sculpin is unknown. It is primarily a pool dweller in streams and its preference for pools does not appear to be strongly affected by seasons. It is normally found in water temperatures less than 20^{o}C and adults tend to be found in deeper, faster water than juveniles.

The species appears to be locally common, but disturbances can have profound effects on its persistence. Most of the waters inhabited by margined sculpins have been degraded by development, logging, agriculture, livestock grazing, and channelization. These activities produce sedimentation of substrate, elevated water temperatures, algal blooms, and reduction in pool habitat. Agricultural and yard chemicals not used properly can directly eliminate fish as well as cause indirect problems such as algal blooms.

Populations in southeastern Washington appear stable, but based on the species' small geographic distribution and limited quality habitat, it could become threatened or endangered without protection of habitat and cooperative management. Margined sculpin in the Tucannon and Walla Walla drainages will likely benefit from habitat protection measures implemented in recent years to protect federally listed chinook salmon (*Oncorhynchus tshawytscha*), steelhead trout (*O. mykiss*), and bull trout (*Salvelinus confluentus*). Current known distribution is displayed on a map in Appendix B.

Interior Columbia Basin Redband trout

This specie was previously discussed under the Management Indicator Species (MIS). For information on the Redband trout see page 16.

Existing Condition

Methodology and Assumptions

For this document, the environmental baseline discussion and discussion of effects use FS habitat stream survey data and WDFW stream survey data as well as GIS analysis and the Interior Columbia Basin Ecosystem Management Project (ICBEMP) summary values (McKinney et al. 1996, see table 11) as directed under ICBEMP memorandum FS agreement No. 03-RMU-11046000-007, and reports in published scientific literature. Water temperature data is referenced from the Umatilla National Forest monitoring records. The seven-day moving maximum and average summer time water temperatures are measured. Stream surveys follow the Region 6 Level II stream survey protocol (following a modified Hankin and Reeves 1988 protocol).

The surveys were conducted to document stream conditions and establish a baseline. Surveys have been completed and updated for most major streams in the Project Area (Table 7).

Table 7. Hankin-Reeves Stream Surveys for the Upper Touchet Project Area

STREAM NAME	SURVEY YEAR	ROSGEN STREAM TYPE
NF Touchet River	1994, 1996, 2018	(Reach 1 and 2) B

The Upper Touchet Vegetation Management Project proposes timber harvest, commercial thinning, non-commercial thinning, mechanical fuel treatments, prescribed burning, road use, construction, and maintenance. Each of these activities carries potential for effects to some component of aquatic habitat. Water quality, habitat quality, and the ability of the watershed and riparian areas to act as a buffer to timber management activity and its connected actions are components of aquatic habitat considered in this analysis. Pool frequency and quality, large woody debris (LWD), width/depth ratios, and water temperature are habitat components that are potentially affected by timber and fuel treatment activities.

These habitat parameters are specifically addressed as PACFISH Riparian Management Objectives (RMO's) (referencing Section 7 Fish Habitat Monitoring Protocol for the Upper Columbia River Basin, USDA Forest Service, 1994), and are summarized in Table 8. These objectives are metrics used to assess the complexity of habitat available for fish within the analysis area. The RMO values may not occur in a specific stream segment within a watershed, but all generally should occur at the watershed scale for stream systems of moderate to large size (3rd to 7th order) (PACFISH EA, Appendix C-5).

Table 8. PACFISH RMOs (UNF LRMP as amended by PACFISH, 1995)

Habitat Feature	RMO's
Pool Frquency Wetted Width (ft) Number of pools/mile	 10 20 25 50 75 100 125 150 200 96 56 47 26 23 18 14 12 9
Water Temperature	No measurable increase in maximum water temperature. * Maximum water temperatures < 64°F within migration and rearing habitats, < 60°F within spawning habitats
Large Woody Debris	East of the Cascades in Oregon and Washington > 20 pieces/mile, >12 inch diameter, >35 ft. length
Bank Stability	>80 percent stable
Width/Depth Ratio	<10, mean wetted width divided by mean depth

Under the Section 7 Habitat Monitoring Protocol for the Upper Columbia River Basin (USDA 1994), PACFISH RMO's are intended to apply to fish bearing Rosgen (1996) C-type channels and are meant to describe good fish habitat. These types of channels are most commonly found in low-gradient channels in wide alluvial valley bottoms. For example, monitoring protocol for determining pool frequency requires count of only pools greater than 1 meter (~3 feet) deep in low gradient (1% -2%) stream channels.

NF Touchet River does not fit these criteria and is more representative of a Rosgen Type B stream channel. Because of this, ICBEMP pool frequencies (Table 9) are more applicable to these streams than the PACFISH standard. ICBEMP pool frequency values are more representative of stream capabilities within the analysis area.

Table 9. Calculated ICBEMP pool frequency values (McKinney et al. 1996)

Wetted Width (ft.)	Pools/mile**
0-5*	39*
5-10	20
10-15	12
15-20	8.4
20-30	5.9
30-35	4.5
35-40	3.9
40-65	2.8
65-100	1.8

*Streams less than 5 feet wide, reaches would be expected to have a lower density of pools; however, there is no available way to calculate an appropriate value so standard would defer to the value of 39 pools per miles selected by the USFWS. **To calculate the standard pools/mile using ICBEMP value of 0.028 for specific widths 147.8/channel width = standard pools/mile.

Habitat Elements:

Additional habitat parameters that are important for determining complex aquatic habitat and considered in this analysis include substrate embeddedness/percent fines, habitat accessibility, off channel habitat and refugia, floodplain connectivity, streambank condition, road density and location (measured as mi/mi^2 and percent drainage network increase), and past disturbance to riparian conservation areas.

Pool Frequency and Quality

Pool quality and quantity was only summarized for those streams surveyed (Table 10). There are few pieces of LWD that create pool habitat, however, there is potential for additional LWD recruitment.

Table 10. Pool frequency in streams surveyed

Stream	Reach	Survey Year	Surveyed pools/mile	PACFISH standard pool/mile	ICBEMP pool frequency	Residual pool depth (ft)
NF Touchet River	1	2018	34.3	96	12	1.3
NF Touchet River	2	2018	29.1	96	12	1.2

Substrate Embeddedness

Cobble embeddedness is the degree to which larger particles (boulder, cobble, and gravel) are surrounded or covered by fine sediment. Substrate embeddedness is a highly subjective measurement and especially difficult to estimate in most of these stream reaches given the gradient, flow, geology and existing riparian condition of the majority of stream reaches in the analysis area. Embeddedness data have not been collected in the project area

According to the NMFS/USFWS matrix of pathways and indicators, if embeddedness data are not available, an alternate way to address this concern is to determine the degree to which cobbles and gravels are the dominant portion of streambed substrate composition and whether interstitial spaces are relatively clear.

Wolman pebble counts were used to characterize substrate composition and percent fines throughout the bankfull streambed. The Wolman pebble count protocol assesses substrate distribution between the bankfull margins of the stream, including outer margins of the streambed that are dry at low flow. Outer margins of the bankfull channel tend to contain more fines than low-flow the wetted channel; therefore, these bankfull to bankfull measurements may overestimate the percent surface fines in the low-flow wetted channel.

Wolman pebble counts were conducted as part of the stream surveys in the project area and were used to calculate percent fines in term of substrate composition. Streams are considered to provide good fish habitat conditions when fines comprise less than 12% of the streambed substrate and cobbles and gravels comprise the majority of the streambed with clear interstitial interspaces. Substrate compositions in the recently surveyed stream reaches within or adjacent to the analysis area are dominated by gravels and cobbles. Only Reach 2 (sample location 4) contains levels of fine sediment marginally high enough to warrant slight concern. The low levels of fines in the substrate composition in the other stream reaches, together with a dominance of gravels and cobbles, support the conclusion that embeddedness is low in the project area streams and that the majority provide good spawning habitat. Table 11 shows the percentage of each substrate category that was found in each stream survey reach.

Table 11. Substrate percentages based Wolman pebble counts

Stream/Reach	Sample Location	Clay, Silt & Sand (%)	Gravel (%)	Cobble (%)	Boulder (%)	Bedrock (%)
NF Touchet River - R1	1	6	54	39	2	0
NF Touchet River - R1	2	12	49	39	1	0
NF Touchet River – R2	3	9	61	30	0	0
NF Touchet River – R2	4	21	48	26	5	0

Large Woody Debris (LWD)

Large woody debris information was collected during recent stream surveys and is summarized in Table 12. All reaches surveyed meet PACFISH RMO's for LWD.

Table 12. Stream Survey Reaches and LWD/mile

Stream Survey Reach	LWD / mile	PACFISH RMO
NF Touchet River - R1	25	> 20 pieces/mile, >12 inch diameter, >35 ft. length
NF Touchet River – R2	38	

Water Quality:

Stream Temperature

Table 13 summarizes continuous recording thermograph data collected downstream of the project area. Data indicates that NF Touchet River has not exceeded the PACFish RMO stream temperature standard for core summer habitat for 24 years. The NF Touchet River routinely exceeds the Washington State water quality standards for char spawning and rearing habitat set at 12°C (53.6°F). However, the location of the thermograph in the system is typically well below where Bull trout spawning and rearing occur.

Stream	92	93	94	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12	14	15	16	17
NF Touchet River	59	54	59	54	55	59	55	57	59	57	58	57	58	58	58	53	55	55	54	55	55	58	55	53

Table 13. Continuous recording thermograph data summary (7-day average maximum)

Instantaneous 'grab' temperatures have also been collected from streams within and downstream of the project area. Temperatures collected were part of the stream surveys conducted by the Forest Service during September 2018. NF Touchet River did not exceed the PACFish RMO for temperature at 37 different sample locations measured during the 2018 stream survey.

Table 14. Instantaneous water temperature data summary - 2018

Watershed	Stream/Reach	Location	Date	Range (°F)	Source
Upper Touchet River	NF Touchet River / Reach 1	19 main channel sites	September 10, 2018	43 – 48	Stream Survey
		5 tributaries	September 10, 2018	43 - 48	Stream Survey
	NF Touchet River / Reach 2	18 main channel sites	September 11, 2018	39 - 45	Stream Survey
		7 tributaries	September 11, 2018	41 - 46	Stream Survey

* Tributary temperatures taken at mouth of each tributary

Sediment

Fine sediment is detrimental to aquatic life through in-filling salmon and trout spawning gravels and water column abrasiveness and opacity.

Sources of sediment include hillslope and channel erosion and the road network. Sediment mobilized from hillslopes and roads may be stored in channels for years or delivered into a stream within a season depending on precipitation patterns. Monitoring sedimentation downstream in the Umatilla River and North and South Forks indicated that much of the annual sedimentation was generated from only a few, large runoff events (Harris and Clifton 1999). Sediment transport during spring snowmelt was the dominant transport process, although rain-on-snow events produced some of the largest single event volumes.

Roads have the potential to intercept surface and subsurface water, reducing infiltration and speeding the delivery of water to channels. Sedimentation may be increased by surface erosion from roads and the ability of road drainage to route sediment to channels.

The main road within the Upper Touchet River watershed runs from Dayton to Ski Bluewood. At the Forest boundary, the road becomes Forest Road 64 and is paved from Dayton to the Ski Bluewood parking area. According to the Hydrology Specialist report the paved road surface is a negligible source of sediment to the NF Touchet River, contributing < 1 ton of sediment per year. For more information on sediment see the Soils and Hydrology reports.

Bank Stability

The stream surveys, within and adjacent to the project area, collected information on stream bank stability. Table 15 summarizes the percentages of stable stream bank for surveyed streams.

Table 15. Percentage of stable stream banks found during stream surveys

Stream	% Stable Stream Bank	Year Surveyed
NF Touchet River - R1	96	2018
NF Touchet River – R2	98	2018

Habitat Access:

Physical Barriers

Access to habitat is no longer being limited by undersized culverts on the Forest within the Upper Touchet River watershed. From 2005 to 2013, the Walla Walla Ranger District replaced 4 passage barrier culverts with three bridges and one bottomless arch culvert. During the same time frame, the District eliminated another passage barrier by removing the culvert and decommissioning the road.

Channel Conditions & Dynamics

Width/Depth Ratio

Interim RMOs (see Table 8) were established as a baseline guide for describing good habitat for anadromous fish for 3rd to 7th order streams at the watershed (HUC10) scale. Data are summarized in Table 16 as a requirement to show compliance with interim RMO metrics. Width to depth ratio was calculated using data from the most recent stream survey for those streams.

Table 16. Average Wetted Width/Depth Ratio for streams

Stream/Reach	Average W:D Ratio	PACFISH RMO
NF Touchet River - R1	15.4	<10, mean wetted width divided by mean depth
NF Touchet River – R2	12.1	

Current status of PACFISH riparian management objectives for fish bearing streams in the analysis area are summarized in Table 17 below. A (+) indicates that a stream is meeting PACFISH objectives while a (-) indicates a stream is not meeting PACFISH RMOs. The specific stream reach data concerning these PACFISH habitat and watershed condition elements are located in the project file. Most recent stream survey data was used and RMOs values reflect an average of stream reaches sampled.

Table 17. Current status of PACFISH RMO's for fish bearing streams in the analysis area

Stream	Reach	Temp	RMO Pools/ mile	ICBEMP Pool/mile	Bank Stability	Width/Depth ratio	LWD/ mile
NF Touchet River	R1	+	-	+	+	-	+
	R2	+	-	+	+	-	+

Management Direction

Desired Condition

Management objectives and standards and guidelines needed to achieve desired conditions are summarized below from PACFISH (USDI 1995) and the Umatilla National Forest Plan (USFS 1990). PACFISH amended the UNF Plan, however, only to the extent that it is more restrictive than Forest Plan criteria. Where direction contained in existing plans is more restrictive than PACFISH, the plan direction applies (PACFISH Q&As, May 24, 1995).

Best Management Practices, Forest Plan Standards and Guides and Project Design Criteria

Appendix A, of this report, contains a combined list of Forest Plan Standards and Guides, PACFish (Riparian Goals and Standards and Guides) and Best Management Practices (BMP's) that were chosen to apply to the proposed action and action alternatives. This list also includes Upper Touchet Project design criteria that have been specifically developed for the Upper Touchet Project Proposed Action and action alternatives. Unless otherwise stated, these measures apply to the proposed action and all action alternatives.

Environmental Consequences

Issues Addressed and Indicators for Assessing Effects

This section analyzes the direct and indirect effects of the proposed project on listed and non-listed native species, designated critical habitats and EFH. Direct effects are immediate impacts, both adverse and beneficial, from project-related actions. Indirect effects are caused by, or result from, the proposed action and may occur later in time. Table 19 is a list of indicators that will be used to assess the effects of the action alternatives for the proposed project.

Table 18. Indicators for Assessing Effects for Fisheries

Objective	Indicator	Justification
Water Quality	Stream temperature	UNF and LRMP as ammended by PACFISH, 1995
Water Quality	Sedimentation	UNF and LRMP as ammended by PACFISH, 1995

In-stream Habitat	Large Woody Debris (LWD)	UNF and LRMP as ammended by PACFISH, 1995
In-stream Habitat	Pools per mile	UNF and LRMP as ammended by PACFISH, 1995
Channel Stability	Width/Depth Ratio	UNF and LRMP as ammended by PACFISH, 1995

Spatial and Temporal Context for Effects Analysis

Spatial Context

The geographical context for estimating direct effects is National Forest System (NFS) lands located within the Upper Touchet River Watershed and directly affected by implementation of proposed activities included in an alternative.

The geographical context for estimating indirect effects is NFS lands located within the Upper Touchet River Watershed. Analysis of indirect effects considers the influence of direct effects occurring at a different time or place than the direct effects themselves.
The geographical context for estimating cumulative effects is the Upper Touchet River Watershed. There is no need to extend the cumulative effects analysis area beyond this watershed.

Temporal Context

The temporal context for evaluating environmental effects considers past, present, and reasonably foreseeable actions in the Upper Touchet Vegetation Management Project planning area, as described below.

Past, Present, and Foreseeable Activities Relevant to Cumulative Effects Analysis

Cumulative impacts result from the incremental impact of the action **when added** to other past, present and reasonably foreseeable future actions. If there are no direct or indirect effects of the proposed action, there cannot be cumulative effects.

Past Actions

Past actions in the analysis area include fires, fire exclusion, timber harvest, road construction, road obliteration, culvert replacement and recreation (OHV trails, dispersed camping, hunting, snowmobiling, Ski Bluewood, and more).

Present Actions

Recreation

The Recreation Report describes the various forms of recreational activities that occur within the project area. There are multiple dispersed camping sites located in RHCAs within the Upper Touchet project area. Other recreation activities include, but not limited to, OHV trails, hunting, snowmobile trails, and Ski Bluewood.

Transportation Management

Motor vehicle and recreational off road vehicle use are administered via the Umatilla National Forest motor vehicle use map (MVUM). The MVUM shows designated NFS roads and trails that allow motor vehicle use, in addition to types of vehicles and seasonal use restrictions. Additional management activities include general road maintenance (road blading, ditch cleanout, road side brushing).

Invasive Weeds Treatment

The Invasive Plants Report identifies invasive species within the project area. Weeds treatment activities would continue to occur along roads and in areas described in the Umatilla National Forest Weeds EIS (2010). New invasive plant populations can be treated after undergoing the Early Detection Rapid Response protocol. All weed treatment activities will adhere to the herbicide label for mixing and application rates for the weed being treated. Design features, as described by the Weed EIS, would be followed during implementation.

Climate Change

The ability to maintain existing high quality habitats and to restore degraded habitats will be influenced by climate change over the next several decades with projected higher average air temperatures, more winter precipitation falling as rain versus snow, and diminishing winter snow packs resulting in earlier snowmelt. Changes in runoff volume and lower summer base flows, higher surface water temperatures, and likely greater year-to-year variability in precipitation could also result in extended drought periods and more severe floods than have occurred in recent history. Changes in timing and amount of runoff associated with climate change affect every resource, including terrestrial vegetation, wildlife, riparian and aquatic species, and water availability for human use.

Lute and Abatzoglou (2014) predict that hydroclimatic changes in the western U.S. are expected to accelerate in the coming decades as human induced changes in temperature and precipitation become more profound (Ashfaq et al 2013). Changes in snowfall accumulation combined with warmer spring temperatures are projected to result in significantly earlier snowmelt and subsequent runoff, lower summer baseflow, and decreased summer surface runoff. In the western United States, the implications of these changes for snow metrics have already been observed in the form of less precipitation falling as snow, decreased April 1 snow water equivalent, earlier snowmelt, decreased spring snow cover extent, and shortened snow cover duration. In the Blue Mountain region of the Umatilla National Forest declines of 20-30% are projected for snowfall water equivalents and number of snow days.

Direct and Indirect Effects by Alternative

Refer to *Description of Project Alternatives* in the beginning of this report for a detailed description of the alternatives. A comparison of treatments by alternative can be found in Table 1. Appendix A, attached to this report contains a list of all design features to follow during the implementation of action alternatives. Utilization of the design criteria will ensure that the impacts to fisheries/aquatic resources are minimized.

Action Alternatives Effects on Fisheries Indicators

Alternative A – Proposed Action

Stream Temperature

According to the Hydrology Specialist Report, Alternative A would not impact water temperature because thinning, and burning would not measurably remove the shade component along any stream channel. No changes to channel condition from silvicultural treatments are expected because water yield and peak flow will not be affected, and therefore, morphological channel changes which could affect stream temperature would not occur.

Danger trees would be felled along all haul routes used in the proposed timber sales. Most stream crossings on haul routes are ephemeral or intermittent with no or very low summer flows. Danger trees felled along haul routes within RHCAs of perennial streams would have negligible effect on shade

density for affected streams. Specific design criteria pertaining to danger trees within RHCAs can be found in Appendix A of this report.

The Project would **not degrade** this indicator under Alternative A.

Sedimentation

Soil erosion is a natural process. Management activities and/or natural disturbances (i.e. fire, floods…) can accelerate these processes through the reduction or removal of vegetative ground cover and canopy cover or both. Other site factors influencing rates of erosion include soil type and topography. Impacts of proposed management activities on sedimentation will be analyzed by comparing natural background sedimentation (Soils Report) and the existing RHCA road system with the proposed miles of RHCA log haul and landscape prescribed burning.

Proposed ground disturbing activities which may result in runoff include harvesting operations, road construction, maintenance and use, mechanical site preparation and prescribed fire. Common sources of accelerated erosion rates associated with timber harvest are the development of roads and skid trails and removal of ground cover by harvest activities, site preparation, slash disposal operations or by high intensity fire effects under burn piles. Through the implementation of best management practices (BMPs) and other design features, the impacts of management activities on sedimentation are expected to be minimized.

Sediment modeling indicates that the existing road system would continue to be the main source of sustained sediment input to streams. Short term risk of sediments being mobilized during rainfall would increase during road maintenance, construction and reconstruction. Design features related to timing of activities and installation of physical erosion measures would minimize the risk of erosion in the short term. Road maintenance and reconstruction, followed by closing/stabilizing Level 1 roads and obliteration of new temporary roads would reduce road-related sediment during the longer term. Appendix A, of this report, contains design features addressing all road management activities.

There would be log haul on approximately 6.6 miles of roads within RHCAs which includes 4.4 miles of paved roads. Erosion on these roads would be more likely to increase suspended sediment in streams than haul outside of RHCAs. Roads inside RHCAs and with culvert problems are the most likely to contribute sediment to surface waters currently. According to the Hydrology Specialist's report, sediment modeling of 24 stream crossings shows an increase from 0.7 tons to 2.2 tons from the additional logging traffic. If stream crossings are surfaced with aggregate and vegetation-lined ditches are not bladed, the model estimates that sediment would be reduced to 1.1 tons. The use of design criteria related to timing of activities and installation of physical erosion measures would minimize the risk of erosion in the short term.

Approximately 1.3 miles of temporary road construction is proposed in Alternative A. Temporary roads include 13 segments ranging from 0.05 to 0.23 miles long. Temporary roads would occur on existing disturbed areas such as old skid trails and new construction would occur on stable terrain. All temp routes would be restored to previous condition, as required in the Forest Plan.
Five logging roads constructed during the initial development of Ski Bluewood have not been returned to production, as described in the original EIS (USFS 1973). These routes have been used for administration of ski facilities and are proposed for use to access treatment units and for haul routes.

These routes occur in Tamarack Run (PR1, 0.6 miles), Slalom Run (PR2, 0.2 miles) and Daytona Run (PR3, 0.2 miles), PR4 (part of decom road 6400600) and PR5 (part of decom road 6400600). PACFISH standard and guideline RF-2 for existing and planned roads requires a road management plan to address road management objectives, criteria that govern road operation, maintenance and management, pre- and

post-storm inspections, regulation of traffic to minimize erosion and sedimentation to streams, and monitoring plans for road stability, drainage and erosion control. Standard and guideline RF-3 says to reconstruct road and drainage features that do not meet design criteria or operation and maintenance standards. After further development for log haul, these roads would be included in the Ski Bluewood SUP and maintained by the permit holder. All routes are native surface material and require spot surfacing and drainage upgrades to minimize sedimentation.

No mechanical or hand thinning would occur in RHCAs. No ignition would take place inside RHCAs during landscape burning, though fire would be allowed to back into RHCAs**;** there would be very little effect to existing down material and vegetation density in near channel positions. WEPP modeling indicates that prescribed fire would remain near background levels.

The proposed activities would cause a limited amount of soil exposure with the possibility of erosion. Eroded soil has the potential to increase stream sedimentation and affect aquatic species. Any sediment produced by the proposed activities would be flushed through the system in the following winter with no long-term impacts. However, all of these activities have been designed to minimize effects to sedimentation. The designs include the use of Best Management Practices, Design Criteria, and Management Requirements from the Forest Plan.

The Project would **not degrade** this indicator under Alternative A.

Large Woody Debris

The proposed activities under this alternative have the potential to increase woody debris available for streams. Hazard trees may be felled within RHCAs and left there to contribute to channel function by providing down wood to retain sediment and help meet LWD RMOs. Similarly, prescribed fire may cause tree mortality in the RHCA's and provide for future LWD recruitment to the streams.

The Project, under Alternative A, would **not degrade** this indicator across the project area.

Pools/mile

There would be no direct effects from timber harvest, thinning or burning to pool frequency because these activities would not occur within the RHCA.

The Project, under Alternative A, would **not degrade** this indicator across the project area.

Width/Depth ratio

There would be no direct effects from timber harvest, thinning or burning to width-depth ratios because these activities would not occur within the RHCA.

Indirect effects would occur during the long-term (decades) as a result of improved streamside vegetation stand structure and composition using silvicultural and prescribed fire techniques aimed at maintaining a relatively even delivery of large woody debris to the channel and providing a mix of riparian tree species.

The Project, under Alternative A, would **not degrade** this indicator across the project area.

Alternative B – No Temporary Roads

Stream Temperature

Effects to this indicator are similar to those described in Alternative A. See Alternative A effects description beginning on page 36 more for details.

The Project would **not degrade** this indicator under Alternative B.

Sedimentation

This alternative does not utilize temporary roads and therefore would produce less sediment as a result. Effects to this indicator are less than those described in Alternative A. See Alternative A effects description beginning on page 36 more for details.

The Project would **not degrade** this indicator under Alternative B.

Large Woody Debris

The proposed activities under this alternative will increase in woody debris available for streams. Hazard trees may be felled within RHCAs and left there to contribute to channel function by providing down wood to retain sediment and help meet LWD RMOs. Similarly, prescribed fire may cause tree mortality in the RHCA's and provide for future LWD recruitment to the streams.

The Project, under Alternative B, would **not degrade** this indicator across the project area.

Pools/mile

There would be no direct effects from timber harvest, thinning or burning to pool frequency because these activities would not occur within the bankfull channel.

The Project, under Alternative B, would **not degrade** this indicator across the project area.

Width/Depth ratio

There would be no direct effects from timber harvest, thinning or burning to width-depth ratios because these activities would not occur within the bankfull channel.

Indirect effects would occur during the long-term (decades) as a result of improved streamside vegetation stand structure and composition using prescribed fire techniques aimed at maintaining a relatively even delivery of large woody debris to the channel and providing a mix of riparian tree species.

The Project, under Alternative B, would **not degrade** this indicator across the project area.

Alternative D – Modified Proposed Action

Stream Temperature

Effects to this indicator are similar to those described in Alternative A. See Alternative A effects description beginning on page 36 more for details.
The Project would **not degrade** this indicator under Alternative D.

Sedimentation

With the exception of temporary roads, effects to this indicator are similar to those described in Alternative A. See Alternative A effects description beginning on page 36 for more details.

Approximately 2.6 miles of temporary road construction is proposed in Alternative A. Temporary roads include 15 segments ranging from 0.05 to 0.72 miles long. Temporary roads would occur on existing disturbed areas such as old skid trails and new construction would occur on stable terrain. All temp routes would be restored to previous condition, as required in the Forest Plan.

The Project would **not degrade** this indicator under Alternative D.

Large Woody Debris

Effects to this indicator are similar to those described in Alternative A. See Alternative A effects description beginning on page 36 more for details.

The Project, under Alternative D, would **not degrade** this indicator across the project area.

Pools/mile

Effects to this indicator are similar to those described in Alternative A. See Alternative A effects description beginning on page 36 more for details.

The Project, under Alternative D, would **not degrade** this indicator across the project area.

Width/Depth ratio

Effects to this indicator are similar to those described in Alternative A. See Alternative A effects description beginning on page 36 more for details.

The Project, under Alternative D, would **not degrade** this indicator across the project area.

Cumulative Effects by Alternative

Alternative A – Proposed Action

Stream Temperature

Past management activities, including road construction/maintenance, recreation, timber harvest and fuels treatments affected the over story structure and thus the shade component of the streams. This ultimately affected stream temperature.

Alternative A would not impact water temperature because thinning, burning and Danger tree management would not measurably remove the shade component along any stream channel. None of the proposed activities, under Alternative A, will affect water yield and peak flow and therefore, morphological channel changes which could affect stream temperature would not occur.

There would be no cumulative effects to stream shade or water temperature as a consequence of implementing this alternative.

Sedimentation

Past actions including fires, fire exclusion, timber harvest, road construction, road obliteration and recreation have occurred in the project area.

Effects to water quality are directly linked to water yield. If erosion from a road or upslope treatment does not enter into a waterbody, there would be no effect to water quality. Sediment transport occurs primarily during spring runoff.

Sediment modeling indicates that the existing road system would continue to be the main source of sustained sediment input to streams. Short term risk of sediments being mobilized during rainfall would increase during road maintenance, construction and reconstruction. Design features related to timing of activities and installation of physical erosion measures would minimize the risk of erosion in the short

term. Road maintenance and reconstruction, followed by closing/stabilizing Level 1 roads and obliteration of new temporary roads would reduce road-related sediment during the longer term.

Appendix A, of this report, contains design features addressing all road management activities.

No cumulative sediment effects are expected because design criteria and BMPs shape the actions proposed in this project such that no measurable sediment is expected to reach surface waters.

Large Woody Debris

Historic logging in the riparian areas likely affected large wood recruitment in watershed streams. Dispersed recreation may have impacted and could still impact in-stream large wood and potential recruitment. Recreational impacts would come in the form of firewood cutters and campers utilizing wood from within the riparian areas.

There will be no timber harvest within the RHCA and therefore will not affect future large wood recruitment. The felling of hazard trees within the RHCAs will increase the amount of wood at the reach scale but may not be measureable at the watershed scale.

No cumulative large woody debris effects are expected because design criteria and BMPs shape the actions proposed in this project such that no measurable impacts are expected.

Pools/mile

Historic logging and recreational impacts likely affected pools/mile over time by reducing the amount of large wood available for recruitment. This has led to a reduction in stream channel roughness, bed scour and in-channel deposition.

This alternative is not expected to have any direct or indirect effects on pools and therefore will have no cumulative effects.

Width/Depth ratio

Historic logging and recreational impacts likely affected width/depth ratio over time by reducing the amount of large wood available for recruitment. This has led to a reduction in stream channel roughness and in-channel deposition.

None of the proposed activities, under Alternative A, will affect water yield, peak flow or large wood recruitment. No morphological channel changes which could affect width/depth ratio would occur.

No cumulative width/depth ratio effects are expected because design criteria and BMPs shape the actions proposed in this project such that no measurable impacts are expected.

Alternative B – No Temporary Roads

Stream Temperature

Past management activities, including road construction/maintenance, recreation, timber harvest and fuels treatments affected the over story structure and thus the shade component of the streams. This ultimately affected stream temperature.

Alternative B would not impact water temperature because silvicultural and fuels treatments would not occur within the RHCAs. Direct ignition of prescribed fire within the RHCA would not be allowed, however the fire would be allowed to back into RHCAs. Danger trees felled within RHCAs would be left

on site. None of these activities are expected to measurably remove the shade component along any stream channel.

None of the proposed activities, under Alternative B, will affect water yield and peak flow and therefore, morphological channel changes which could affect stream temperature would not occur.

There would be no cumulative effects to stream shade or water temperature as a consequence of implementing this alternative.

Sedimentation

Past actions including fires, fire exclusion, timber harvest, road construction, road obliteration and recreation have occurred in the project area.

Effects to water quality are directly linked to water yield. If erosion from a road or upslope treatment does not enter into a waterbody, there would be no effect to water quality. Sediment transport occurs primarily during spring runoff.

Effects under this alternative are expected to be less than Alternative A due to no temporary roads. No cumulative sediment effects are expected because design criteria and BMPs shape the actions proposed in this project such that no measurable sediment is expected to reach surface waters.

Large Woody Debris

Historic logging in the riparian areas likely affected large wood recruitment in watershed streams. Dispersed recreation may have impacted and could still impact in-stream large wood and potential recruitment. Recreational impacts would come in the form of firewood cutters and campers utilizing wood from within the riparian areas.

Cumulative large woody debris effects under this alternative are similar to those described in Alternative A. See Alternative A Cumulative Effects descriptions beginning on page 40.

Pools/mile

Historic logging and recreational impacts likely affected pools/mile over time by reducing the amount of large wood available for recruitment. This has led to a reduction in stream channel roughness, bed scour and in-channel deposition.

Cumulative pools/mile effects under this alternative are similar to those described in Alternative A. See Alternative A Cumulative Effects descriptions beginning on page 40.

Width/Depth ratio

Historic logging and recreational impacts likely affected width/depth ratio over time by reducing the amount of large wood available for recruitment. This has led to a reduction in stream channel roughness and in-channel deposition.

Cumulative width/depth ratio effects under this alternative are similar to those described in Alternative A. See Alternative A Cumulative Effects descriptions beginning on page 40.

Alternative D – Modified Proposed Action

Cumulative effects under this alternative would be similar as those described in Alternative B.

Compliance with Forest Plan and Other Relevant Laws, Regulations, Policies and Plans

All of these alternatives would be consistent with Forest Plan direction regarding native fish populations. None of the potential effects of timber harvest, fire/fuels management and associated activities, under any of these alternatives, would be expected to retard progress towards PACFISH Riparian Management Objectives. Application of PACFISH direction would maintain or improve fish habitat conditions in the analysis area.

Consultation on the Upper Touchet Vegetation Management Project, with NOAA Fisheries and U.S. Fish and Wildlife Service is not required due to the No Effect determination. The project will have No Effect on ESA listed SRB steelhead and their DCH, Mid-Columbia River steelhead and their DCH, Snake River Spring/Summer Chinook salmon and their DCH, Bull trout and their DCH and will Not Affect Essential Fish Habitat for salmon. Besides those just mentioned, there would be no effects to other listed fish and their designated critical habitats and No Impact to sensitive aquatic species and their habitats.

Effects to Management Indicator Species

For redband trout, a Forest management indicator species, no alternative would result in any direct, indirect or cumulative population level impacts nor a negative habitat trend at either the watershed or Forest scale.

Resident redband trout and their habitat may be affected by harvest, burning and road management activities, particularly where those activities occur within RHCAs. Project design criteria and BMP monitoring would ensure that the probability and magnitude of those effects remain both unlikely and immeasurable to the extent they occur.

As a result, the proposed activities under these alternatives would not affect the viability of redband trout at the watershed scale. Thus, continued viability for redband trout as a species is expected on the Umatilla National Forest under all alternatives.

For steelhead, a Forest management indicator species, the overall direct and indirect effects of any of this project's action alternatives would limit effects to steelhead and their habitat at the project scale and thus at the forest scale, due to distance from project activities, and due to project design criteria and BMP monitoring that will ensure any impacts from activities, to the fish habitat indicators, would be unlikely and immeasurable. No alternatives would reduce population viability or result in a negative habitat trend at either the watershed or Forest scale.

During the 5-year ESA status review of the Snake River Basin steelhead, it was determined that the Grande Ronde River, Lower Mainstem summer steelhead population remains provisionally rated as maintained (NMFS, 2016). A similar review of the Middle Columbia River steelhead concluded that the Touchet River population remains at high risk, primarily due to low productivity (NMFS, 2016). This project would not retard recovery of populations in the Grande Ronde River MPG or Umatilla / Walla Walla Rivers MPG. The project is consistent with the Forest Plan as amended by PACFISH; none of the project alternatives would retard recovery of Snake River Basin steelhead or the Mid-Columbia River steelhead within NFS lands; they are all consistent with relevant standards and guidelines for the various activities.

First Foods

The Upper Touchet Vegetation Management Project alternatives would not impact fisheries resources, which are one of the First Foods within the analysis area. These resources are valued by Native American

tribal members, who hunt and gather salmonid species in their usual and accustomed areas. The effects determination made for the Upper Touchet Vegetation Management project was that it would have "No Effect" on Snake River Basin steelhead or their designated critical habitat, "No Effect" on Mid-Columbia River steelhead or their designated critical habitat, "No Effect" on Snake River Spring/Summer Chinook salmon or their designated critical habitat, "No Effect" on Bull trout or their designated critical habitat and "will not affect" Essential Fish Habitat for salmon.

Biological Evaluation and Determination of Effects For the Upper Touchet Project

Snake River Basin steelhead and Designated Critical Habitat, Mid-Columbia River Steelhead and Designated Critical Habitat, Snake River Spring/Summer Chinook salmon and Designated Critical Habitat, Bull trout and Designated Critical Habitat, Essential Fish Habitat (EFH), USFS R6 sensitive fish and aquatic invertebrates and their habitat

Snake River Basin steelhead and Designated Critical Habitat

Alternatives A, B and D

The steelhead population that inhabits the Upper Touchet project area is part of the Grande Ronde River Major Population Group (MPG), within the Snake River Basin Steelhead DPS. They spawn and rear in 91.7 miles of stream within the Wenaha River watershed, however they do not occupy any streams within the project area. There is no designated critical habitat (DCH) for Snake River Basin steelhead within the project area. The closest occupied stream is approximately 0.7 miles away from the project boundary.

The Upper Touchet project will have no direct or indirect effects on SRB steelhead and their DCH. Since there are no direct or indirect effects to the species or their DCH there can be no cumulative effects.

Therefore, the implementation of the Upper Touchet Vegetation Management Project activities (harvesting, prescribed fire/fuels management and road management) under any of the action Alternatives will have **'No E*ffect'*** on Snake River Basin steelhead and will have ***'No Effect'*** on Designated Critical Habitat for SRB steelhead.

Mid-Columbia River steelhead and Designated Critical Habitat

Alternatives A, B and D

The steelhead population that inhabits the Upper Touchet project area is part of the Walla Walla / Umatilla River Major Population Group (MPG), within the Mid-Columbia River Steelhead DPS. They spawn and rear in 105.1 miles of streams within the Upper Touchet River watershed, however they do not occupy any streams within the project area. There is approximately 0.6 miles of Designated Critical Habitat (DCH) for Mid-Columbia River steelhead within the project area. Steelhead can be found in the North Fork Touchet River approximately 2.0 miles downstream of the project boundary.

The Upper Touchet project will have no direct or indirect effects on Mid-Columbia River steelhead and their DCH. Since there are no direct or indirect effects to the species or their DCH there can be no cumulative effects.

Therefore, the implementation of the Upper Touchet Vegetation Management Project activities (harvesting, prescribed fire/fuels management and road management) under any of the action

Alternatives will have **'No E*ffect'*** on Mid-Columbia River steelhead and will have ***'No Effect'*** on Designated Critical Habitat for Mid-Columbia River steelhead.

Chinook salmon, Designated Critical Habitat and Essential Fish Habitat

Alternatives A, B and D

Snake River spring/summer Chinook salmon are not found within the Upper Touchet Vegetation Management project boundary. They can be found in the Wenaha River watershed approximately 0.9 miles outside of the project boundary. Designated critical habitat for the Snake River spring/summer Chinook salmon is not mapped but is described in narrative in the rule (64 FR 57399). Critical Habitat includes those waters that are accessible upstream of occupied habitat. There is no Designated Critical Habitat for Snake River spring/summer Chinook salmon within the project boundary

The geographic extent of salmon freshwater EFH is described as all water bodies currently or historically occupied by Council-managed salmon within the USGS 8th field hydrologic unit codes (HUC). Chinook salmon EFH includes all habitat currently or historically occupied within Washington, Oregon, Idaho, and California. The Upper Touchet project area falls within two HUC 8 hydrologic unit boundaries (Walla Walla Subbasin and Lower Grande Ronde Subbasin). The Lower Grande Ronde Subbasin is the only one identified in the Pacific salmon Fisheries Management Plan as **EFH** and contains EFH for Chinook and Coho salmon**.**

Freshwater EFH for both Chinook salmon and Coho salmon consists of four major components, (1) spawning and incubation; (2) juvenile rearing; (3) juvenile migration corridors; and (4) adult migration corridors and holding habitat.

There are only 147 acres of the Upper Touchet project area within the Lower Grande Ronde Subbasin and only 34.5 to 87.5 acres are within proposed activity units, depending on alternative. There are no streams, RHCAs, fish or other components described in the paragraphs above that meet the criteria to justify calling any of those acres EFH. It is my professional judgement, based on the rationale provided above, that this project will not affect, directly or indirectly, EFH for salmon.

There would be no direct, indirect or cumulative effects on Snake River spring/summer Chinook salmon or their DCH from the implementation of the Upper Touchet Vegetation Management Project under any of the action Alternatives. This is based on the distance of project activities from occupied habitat, and the implementation of project design features and BMP monitoring,

Therefore, the implementation of the Upper Touchet Vegetation Management Project activities (harvesting, prescribed fire/fuels management and road management) under any of the action Alternatives will have **'No E*ffect'*** on Snake River spring/summer Chinook salmon and will have ***'No Effect'*** on Designated Critical Habitat for Snake River spring/summer Chinook salmon and ***'Will Not Adversely Affect'*** Essential Fish Habitat for Chinook salmon.

Bull trout and Designated Critical Habitat

Alternatives A, B and D

Bull trout are known to occur in approximately 137.9 miles of streams in the Upper Touchet River and Wenaha River watersheds and presumed to occur in additional 7.9 miles. Many of those known occupied streams, approximately 137.6 miles, are listed as Designated Critical Habitat (DCH) by the U.S. Fish and

Wildlife Service. Bull trout are known to occupy approximately 1.8 mile of streams within the Project boundary. Additionally, those same streams are listed as Designated Critical Habitat. Based on the distance from project activities and occupied habitat, and the implementation of project design features and BMP monitoring, there would be no direct, indirect or cumulative effects from the implementation of the Upper Touchet Vegetation Management Project under any of the action Alternatives.

For the reasons stated above, the implementation of the Upper Touchet Vegetation Management Project under any of the action Alternatives described above will have ***'No Effect'*** on Bull trout and/or their Designated Critical Habitat.

Interior Columbia Basin Redband trout

Alternatives A, B and D

Redband trout are present in approximately 156.3 miles of streams within the Upper Touchet River and Wenaha River Watersheds. Of those occupied streams, 15.2 miles are above physical barriers. Redband trout are present in approximately 1.1 miles of stream within the Upper Touchet project area. Based on the distance from project activities and occupied habitat, and the implementation of project design features and BMP monitoring, there would be no direct, indirect or cumulative effects from the implementation of the Upper Touchet Vegetation Management Project under any of the action Alternatives.

For reasons stated above, the implementation of the Upper Touchet Vegetation Management Project Project under any of the action Alternatives would have ***'no impact'*** on Redband trout individuals or their habitat.

Margined Sculpin

Alternatives A, B and D

Margined sculpin occur only in the Tucannon and Walla Walla River drainages. The historical range of the sculpin is unknown. It is primarily a pool dweller in streams and its preference for pools does not appear to be strongly affected by seasons. It is normally found in water temperatures less than 20^{o}C and adults tend to be found in deeper, faster water than juveniles.

Populations in southeastern Washington appear stable, but based on the species' small geographic distribution and limited quality habitat, it could become threatened or endangered without protection of habitat and cooperative management. Margined sculpin in the Tucannon and Walla Walla drainages will likely benefit from habitat protection measures implemented in recent years to protect federally listed chinook salmon (*Oncorhynchus tshawytscha*), steelhead trout (*O. mykiss*), and bull trout (*Salvelinus confluentus*).

Based on the distance from project activities and occupied habitat, and the implementation of project design features and BMP monitoring, there would be no direct, indirect or cumulative effects from the implementation of the Upper Touchet Vegetation Management Project under any of the action Alternatives.

For reasons stated above, the implementation of the Upper Touchet Vegetation Management Project Project under any of the action Alternatives would have ***'no impact'*** on Margined sculpin individuals or their habitat.

Pacific Lamprey

Alternatives A, B and D

Historically, Pacific lamprey spawned in the Wenaha River and Touchet River systems. It is currently unknown how many Pacific lamprey return each year to spawn in the streams mentioned above. There have not been any documented Pacific lamprey spawning within or adjacent to the Upper Touchet Project. Due to the species not being present in the project area and through implementation of project design features and BMP monitoring, there would be no direct, indirect or cumulative effects from the implementation of the Upper Touchet Vegetation Management Project under any of the action Alternatives.

For reasons stated above, the implementation of the Upper Touchet Vegetation Management Project Project under and of the action Alternative would have ***'no impact'*** on Pacific lamprey individuals or their habitat.

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Appendix A: Best Management Practices (BMPs), Forest Plan Standards and Guides and Project Design Criteria (PDC)

This section describes best management practices, Forest Plan Standards and Guides and project design criteria specific to the Upper Touchet Vegetation Management Project. These items may be modified or changed, or new criteria may be added in response to public comments.

Table 19. Best Management Practices, Forest Plan Standards and Guides and Project Design Criteria

RESOURCE	#	BMPs, FOREST PLAN STANDARDS AND GUIDES AND PDC
RHCAs	1	Stream and riparian protection is based on the Forest Plan as amended by PACFISH. PACFISH standards and guidelines related to timber harvest, roads, and fire apply to this project and are incorporated by reference into this document. No harvest, landings, noncommercial thinning or slash piling will take place in RHCAs which are described below as they apply to this project. • **Category 1 - Fish-bearing streams:** RHCAs consist of the stream and the area on either side of the stream extending 300 feet slope distance from the edges of the active stream channel. • **Category 2 - Perennial non-fish-bearing streams:** RHCAs consist of the stream and the area on either side of the stream extending 150 feet slope distance from the edges of the active stream channel. • **Category 3 - Ponds, lakes, reservoirs, and wetlands greater than 1 acre:** RHCAs consist of the body of water or wetland and the area to the outer edges of the riparian vegetation, or the extent of the seasonally saturated soil, or 150 feet slope distance from the edge of the maximum pool elevation of constructed ponds and reservoirs or from the edge of the wetland, pond or lake, whichever is greatest. • **Category 4 - Seasonally flowing or intermittent streams, wetlands less than 1 acre, landslides, and landslide-prone areas:** This category includes criteria with high variability in size and site-specific characteristics. At a minimum the RHCAs must include: the area from the edges of the stream channel, wetland, landslide, or land-slide prone area to a distance equal to 100 feet.

	2	The following PACFISH standards and guides apply to this project and can be found on pages C10 – C18 of the PACFISH document: https://archive.org/details/decisionnoticede23unit/page/n151 • **TM – 1** Prohibit timber harvest, including fuelwood cutting, in Riparian Habitat Conservation Areas, except as described below. Do not include Riparian Habitat Conservation Areas in the land base used to determine the Allowable Sale Quantity, but any volume harvested can contribute to the timber sale program. ○ b. Apply silvicultural practices for RHCAs to acquire desired vegetation characteristics where needed to attain RMOs. Apply silvicultural practices in a manner that does not retard attainment of RMOs and that avoids adverse effects on listed anadromous fish. • **RF – 2** For each existing or planned road, meet the RMOs and avoid adverse effects on listed anadromous fish by: ○ b. minimize road and landing locations in RHCAs ○ d. avoiding sediment delivery to streams from the road surface ○ e. avoiding disruption of natural hydrologic flow paths ○ f. avoiding sidecasting of soils or snow. Sidecasting of road material is prohibited on road segments within or abutting RHCAs in watersheds containing designated critical habitat for listed anadromous fish. • **RF - 3** Determine the influence of each road on the RMOs. Meet RMOs and avoid adverse effects on listed anadromous fish by: ○ reconstructing road and drainage features that do not meet design criteria or operation and maintenance standards, or that have been shown to be less effective than designed for controlling sediment delivery, or that retard attainment of RMOs, or do not protect designated critical habitat for listed anadromous fish from increased sedimentation. ○ Prioritizing reconstruction based on the current and potential damage to listed anadromous fish and their designated critical habitat, the ecological value of the riparian resources affected and the feasibility of options such as helicopter logging and road relocation out of RHCAs ○ Closing and stabilizing or obliterating roads not needed for future management activities. Prioritized these actions based on the current and potential damage to listed anadromous fish and their designated critical habitat and the ecological value of the riparian resources affected. • **RF – 5** Provide and maintain fish passage at all road crossings of existing and potential fish-bearing streams • **FM – 1** Design fuel treatment and fire suppression strategies, practices, and actions so as not to prevent attainment of RMOs, and to minimize disturbance of riparian ground cover and vegetation. Strategies should recognize the role of fire in ecosystem function and identify those instances where fire suppression or fuel management actions could perpetuate or be damaging to long-term *ecosystem* function, listed anadromous fish, or designated critical habitat

		• **FM – 4** Design prescribed bum projects and prescriptions to contribute to the *attainment* of the RMOs. • **FM – 5** Immediately establish an emergency team to develop a rehabilitation treatment plan to *attain* RMOs and *avoid* adverse effects on listed anadromous fish whenever RHCAs are significantly damaged by a wildfire or a prescribed fire burning out, of prescription. • **RA – 2** Trees may be felled in RHCAs when they pose a safety risk. Keep felled trees on site when needed to meet woody debris objectives. • **RA – 3** Apply herbicides, pesticides, and other toxicants, and other chemicals in a manner that does not retard or prevent attainment of RMOs and avoids adverse effects on listed anadromous fish. • **RA – 4** Prohibit storage of fuels and other toxicants within RHCAs. Prohibit refueling within RHCAs unless there are no other alternatives. Refueling sites within a RHCA must be approved by the Forest Service or Bureau of Land Management and have an approved spill containment plan. • **RA – 5** Locate water drafting Sites to avoid adverse effects to listed anadromous fish and instream flows, and in a manner that does not retard or prevent attainment of RMOs. **GLOSSARY** • Attain RMOs – Meet riparian management objectives for the given attributes. For habitats below the objective level, recovery will be initiated during the period the interim strategy is in place. For habitats at or better than the objective level, maintain at least the current condition. Actions that 'degrade' habitat conditions (as defined elsewhere) would be considered inconsistent with the concept of attaining RMOs. • Degrade – Measurably change an RMO feature in a way that: o Further reduces habitat quality where existing conditions meet or are worse than objective values o Reduces habitat quality where existing conditions are better than the objective values • Prevent Attainment of RMOs – Preclude attainment of habitat conditions that meet RMOs. Permanent or long-term modification of the physical/biological processes or conditions that determine the RMO features would be considered to prevent attainment of RMOs. • Retard Attainment of RMOs – Measurably slow recovery of any identified RMO feature (e.g. pool frequency, water temperature, etc.) that is worse than the objective level. Degradation of the physical/biological process or conditions that determine RMO features would also be considered to retard attainment of RMOs.
	3	Prescribed Fire will not be ignited in RHCAs, but will be allowed to back into RHCAs
	1	Water Drafting (for dust abatement or prescribed fire): Do not excavate stream bed to

<table>
<tr><td rowspan="3">FISHERIES</td><td></td><td>create pools to draft from.</td></tr>
<tr><td>2</td><td>Install and maintain straw wattles in ditches where vegetation was removed during ditch cleanout. Spacing between the wattles should be every 100 feet between the last cross drain and any stream crossing adjacent to Bull trout habitat.</td></tr>
<tr><td>3</td><td>Besides straw wattles and prior to where the ditch empties into the stream channel, installation of a catch basin to serve as a sediment filter for flows emptying in to any occupied bull trout habitat</td></tr>
<tr><td rowspan="5">ROADS</td><td>1</td><td>Improve operational condition of Road System to support all levels of traffic</td></tr>
<tr><td>2</td><td>Perform appropriate maintenance to mitigate the impacts of commercial haul on the transportation system</td></tr>
<tr><td>3</td><td>Stabilize all system roads not open to the public in such a way that erosion risks from storms and seasonal run-off are minimized</td></tr>
<tr><td>4</td><td>Correct deficiencies within the road system of the project area, by improving drainage capacity, outsloping, surfacing, or any other tasks necessary to return the road system to the operational standard.</td></tr>
<tr><td>1</td><td>Use existing roads, skid trails, and landings as much as possible during harvest and fuel treatment activities. Construct temporary roads in units with deep soils. Upon completion of project activities, use subsoiler or excavator buck teeth to break up compacted soil conditions. Other actions to restore temporary roads may include culvert removal, contouring cut and fill areas, and dispersing a thin layer of slash or other organic materials over treated surfaces.</td></tr>
<tr><td rowspan="5">SOILS</td><td>2</td><td>To minimize additional detrimental soil impacts from burning, pile fuels (both hand and machine piles) on sites already disturbed by logging activities (old skid trails, and landings). To prevent sediment movement refrain from fuel piling above or below culverts or in drainages Limit pile size to less than a normal landing area to reduce organic horizon loss and limit soil heating. Follow best management practices for fire burning to reduce organic matter loss.

To control erosion, retain as much duff as possible while meeting fuel reduction objectives. For landscape and pile burning, maintain 20 percent or less soil exposure on slopes greater than 35%.</td></tr>
<tr><td>3</td><td>Fire-line construction to meet minimal standards for prescribed burning. Locations will be evaluated post-harvest. As needed, place water bars for all firelines and seed all fire-lines after project completion. Reclaim machine-built fire lines by redistributing displaced topsoil and unburned woody debris over the disturbed surface. Water-bars be cut at an angle of 30-40 degrees and depth of 12-18 inches. Install waterbars on fire-lines, temporary roads, and skid trails with spacing indicated in the table:
<table>
<tr><td>Gradient</td><td>Spacing</td></tr>
<tr><td>< 5 %</td><td>200 ft</td></tr>
<tr><td>5-10 %</td><td>150 ft</td></tr>
<tr><td>10-20 %</td><td>100 ft</td></tr>
<tr><td>21–40 %</td><td>50 ft</td></tr>
<tr><td>> 40%</td><td>25 ft</td></tr>
</table>
</td></tr>
<tr><td>4</td><td>Yarding spacing for optimum efficiency and minimum soil disturbance is encouraged. In general, equipment trails average 50 feet apart, except where converging. Maintain skid trail spacing averaging 100 feet. Avoid yarding activity on shallow soils.</td></tr>
<tr><td>5</td><td>Utilize low ground pressure equipment along with existing trail system and landings as much as possible. To limit detrimental soil disturbance low ground pressure equipment (less than 8.5 pounds per square inch [psi]) can be allowed off trails on dry, snow-covered, or frozen soil. All other heavy equipment should remain on trails and roads.</td></tr>
</table>

	6	Mastication treatments follow ground-based design criteria, as well as the following: plan off trail travel paths to make full use of the machine's capability to limit soil disturbance and limit the number of vehicle passes on trails; utilize existing forwarding and skid trails as much as possible; work in long linear swaths to the extent practical when using a front-mounted fixed mastication head avoiding unnecessary pivoting and turning; maintain adequate distance between mastication head and soil surface to prevent soil disturbance.
	7	To maintain optimal soil conditions, use forwarders on a slash mat with a minimum of 12 inches. To limit compaction or soil displacement, activity on thinner slash mats should minimize passes over the area t. Forwarder activity on dry soil, with dryness exceeding 2 to 6 inches of the soil surface is preferred when slash mats are thinner than 12 inches.
	8	Retain adequate supplies of coarse woody debris (greater than 3 inches in diameter) following completion of project activities. Where feasible, approximately 10 to 15 tons per acre of coarse woody debris will be retained on mixed conifer sites. In order to retain adequate organic matter reservoirs for nutrient recycling and to maintain long term site productivity, minimize the disturbance and piling of decaying coarse woody debris during fuel treatments.
	9	Use of ground-based equipment on slopes exceeding 35% should be limited to short pitches on mountain backslopes. Greater activity on steep slopes requires vehicle features or equipment to minimize track or tire slippage limiting focused pressure by the equipment to gain traction on steeper slopes. Appropriate equipment for steeper slopes is encouraged. Directional felling or winching is recommended for use where necessary. Avoid uphill skidding or forwarding for more than 40 feet on slopes steeper than 35 percent.
	10	In non-commercial thinning units, mechanical thinning equipment may be used when equipment does not exceed 7 PSI. Where feasible, limit vehicle activity to a single pass.
	11	Design and construct landings to minimize size, while still providing for safe operations.
	12	Erosion control measures will occur on all skid trails and landings, as specified under timber sale contract provisions B (T) 6.67 and C (T) 6.6#. Seed soil exposed by contract operations using native seed. Subsoil, waterbar, and mulch using existing slash as necessary to prevent erosion. Apply erosion control measures in a timely manner to reduce erosion the winter after activities.
	13	Placement of new temporary roads will be on deep soils, if it is operationally feasible.
	14	Install drainage if roads remain over-winter, subsoil if needed, pull berms into roadbed, revegetate with native seed, mulch with existing slash, and camouflage entrance to discourage use.
	15	Avoid operating on shallow soils which are identified by the following plant associations: PSSPS-Sandberg bluegrass (GB41), ARTRV/FEID-PSSPS (SD2911), ARTRV-mountain snowberry/mountain brome (SD2917), ARTRV, western needlegrass (SD2920), and green fescue (GS11). Avoid using these soils for landings or skid trails unless over frozen ground/snow, unless no other location is practical. If use is necessary disturbance will be kept to a minimum amount of the area, preferably at the edges of these features. Restorative actions, such as scarifying, seeding, mulching and/or adding nutrients, such as biochar would be used improve soil productivity.
	16	Suitable parts of units 34 and 34A will benefit from subsoiling activities and reduce

		detrimental soil conditions (DSC) to 17 percent of the unit, not counting system roads. (If post-harvest inspection of the unit shows DSCs are already below 17%, no subsoiling would be needed.) Subsoiling guidelines can be found in the specialist report.
	17	Optimal conditions for ground based equipment are when soil conditions are dry, frozen, or snow covered enough to support machinery adequately. If possible, operate on a bed of slash (>30 cm thick) to mitigate soil compaction and displacement on all soils. Dry soil conditions are when surface horizons between 2 to 6 inches of the soil surface are dry. When slash mat availability is less than 12 inches dry soil conditions are recommended. Recommendations for machine operation during winter activities include: 15 cm of frozen ground 8 cm of frozen ground with 25 cm of settled snow; 50 cm or more of snow; 25 cm of slash mat in combination with 35 cm of settled snow; or moisture conditions acceptable for minimizing rutting or puddling of soils. Indicators of cold weather condition failure include: machine break-through begins to occur; equipment tracks sink half the width of the track below the soil surface with one or two passes; ruts greater than 15 cm deep form in the soil; mid-day temperatures rise above freezing; surface melt occurs over existing frozen surfaces. Use of harvest or mastication equipment should be limited or halted when soils reach moisture field capacity. This will limit the potential of long-term detrimental soil disturbance
	1	As referenced under timber sale contract standard provisions B(T)6.5 “Stream course Protection and B(T)6.6 “Erosion Prevention and Control”, commercial use of National Forest roads shall be suspended when commercial contract or permit operations create movement of sediment laden water from the road surface in areas where it could flow into stream channels. This may be from pumping of saturated fines by passage of commercial or contract vehicles, creating sediment laden water on the road surface during rain or snowmelt periods.
WATER QUALITY	2	Timber sale purchaser will prepare a spill containment plan that will ensure that spilled fuel will not leave the site. Fuel will not be stored within any RHCA. Refueling, repair, and maintenance of equipment will be done at landings or on forest roads outside of RHCAs.
	3	Where the proposed haul routes encounter wet areas (e.g. streams, springs, seeps, wetlands) new drainage structures and surface rock will be installed to prevent rutting and sedimentation.
	4	Proposed temporary roads will have drainage installed if retained over-winter. Upon completion of project activity, roads will be subsoiled if required. Berms will be pulled into the roadbed and re-contoured, and the road will be revegetated with native seed and mulched with existing slash. Road entrances may be camouflaged to discourage use.
	5	During road maintenance and snow plowing side casting of materials will not occur where these materials could be directly or indirectly introduced into a stream, or where the placement of these materials could contribute to the destabilization of the slope.
	6	Slough and waste materials removed during road maintenance activities, including ditch and culvert cleaning, will be deposited in approved disposal areas outside of RHCAs. For erosion control and stabilization the disposal site will be seeded with native species.
	7	During snow plowing side casting of materials will not occur where these materials could be directly or indirectly introduced into a stream, or where the placement of these materials could contribute to the destabilization of the slope.
	8	Ditches will only be maintained where the water captured by the ditch is not able to be

		transported to the adjacent drainage structure that carries the water across the road.
	9	The following design criteria will be used for road decommissioning: • Where decommissioning crosses draws or channels, work will be done when channels are dry. • Draws will be contoured to match upstream and downstream channel features including: gradient, streambank width and channel cross-sectional area, and floodplain, if present. • Re-contoured draws will be seeded with local, weed free native seed and mulched with on-site material or weed free straw or hay. • Roadbeds will be de-compacted and drained as necessary to prevent erosion. • Where full re-contour does not occur, remaining fill will be stabilized. Where re-contouring occurs reconnect the surface of the cut bank slope with the re-contoured fill slope
	10	Ephemeral Streams: • Harvest systems will be designed to minimize crossing ephemeral draws. • Ground based equipment will only cross ephemeral draws and channels at sites pre-approved by the responsible Forest official, and crossings will be minimized. • Ephemeral draws will not be crossed where equipment will cause bank breakdown. Woody debris or rock may be placed into crossings to reduce soil disturbance and compaction. • Ephemeral stream channels will not be used as forwarder trails, landing sites, or as road locations. • All embedded wood will be retained. Other wood will be retained as specified in project design criteria for Wildlife.
		•

Appendix B: Upper Touchet Vegetation Management Project Species Distribution and Designated Critical Habitat Maps

Figure 1 Steelhead distribution within each watershed and adjacent to the Upper Touchet Project.

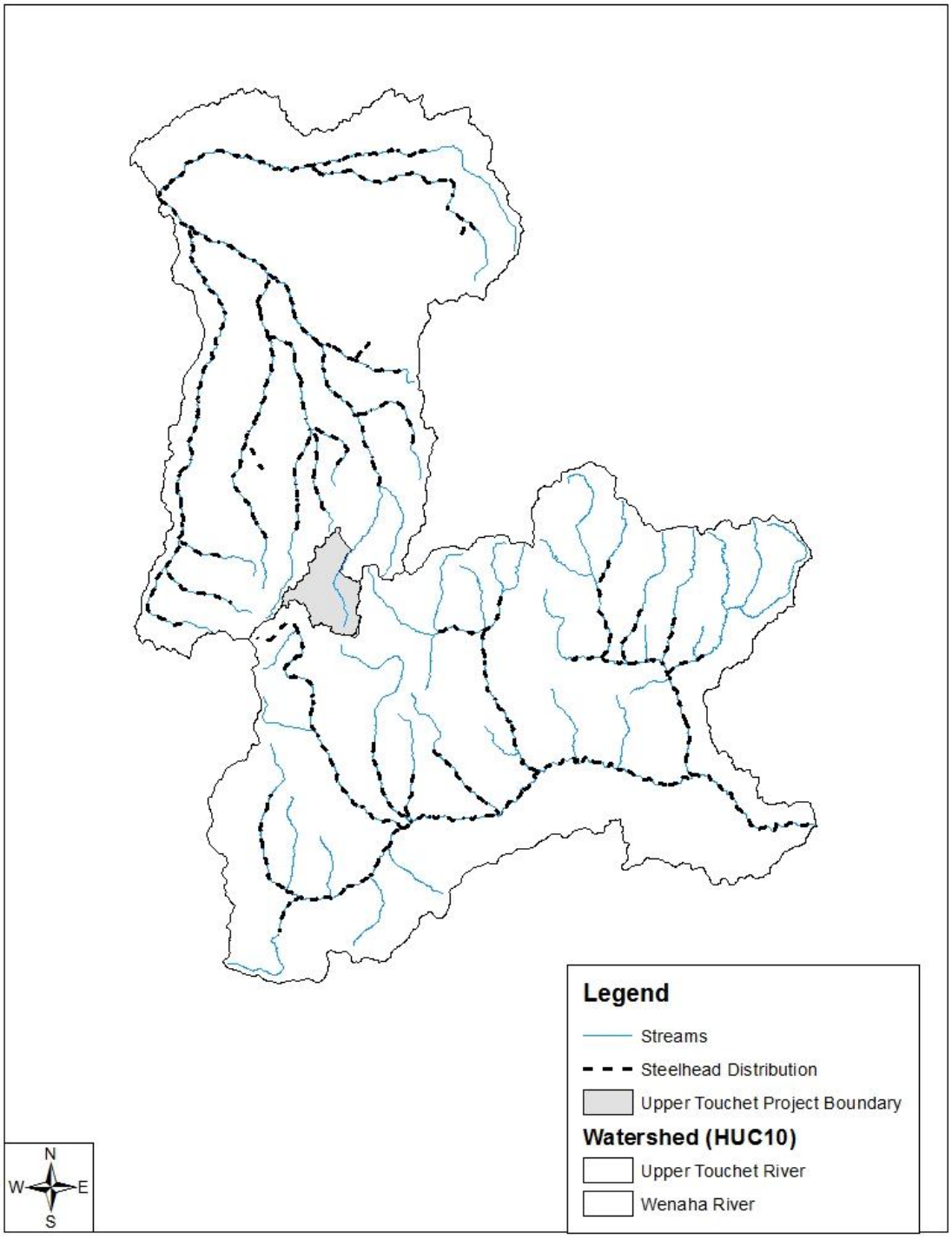

Figure 2. Steelhead Designated Critical Habitat within and adjacent to the Upper Touchet Project

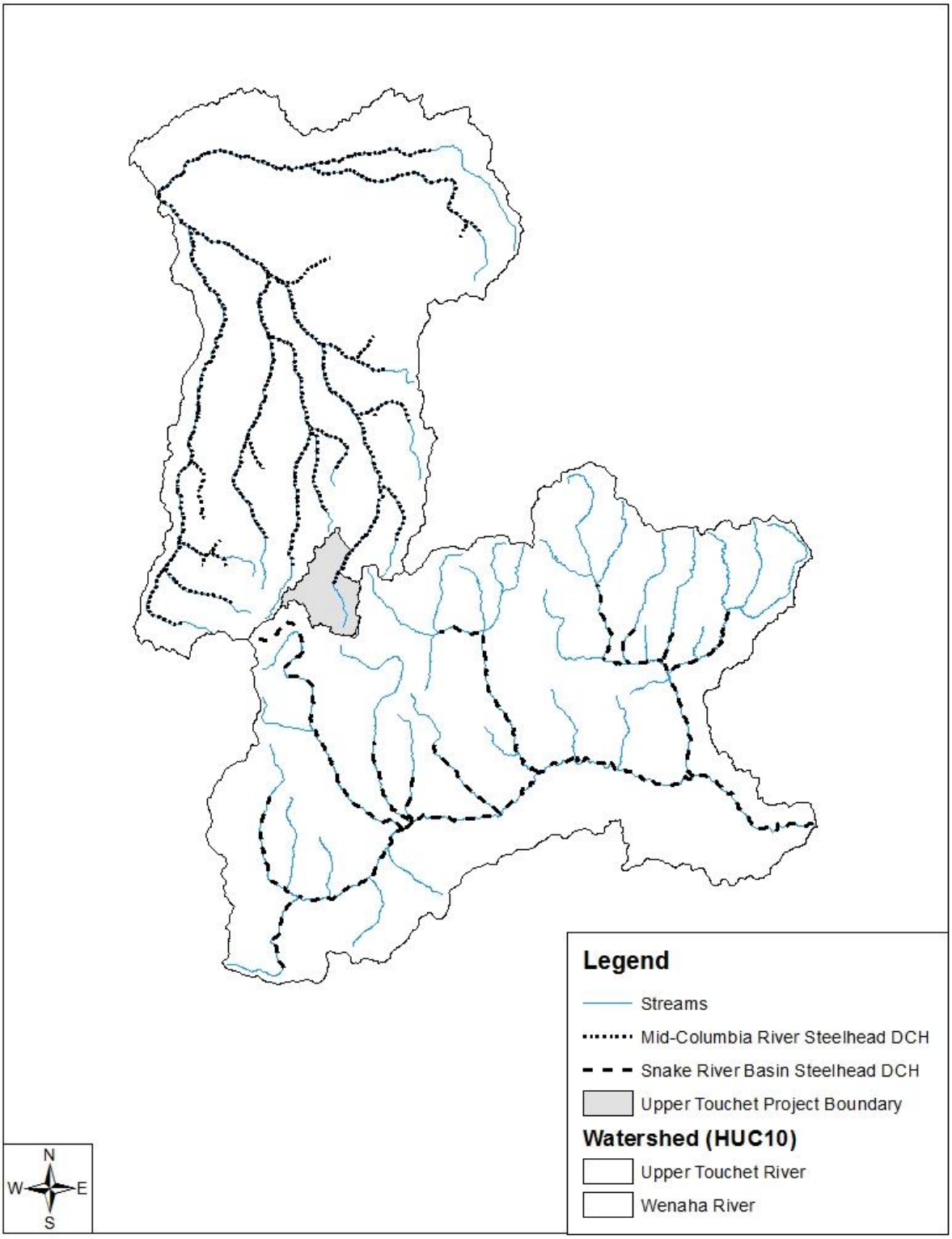

Figure 3. Chinook salmon distribution adjacent to the Upper Touchet Project

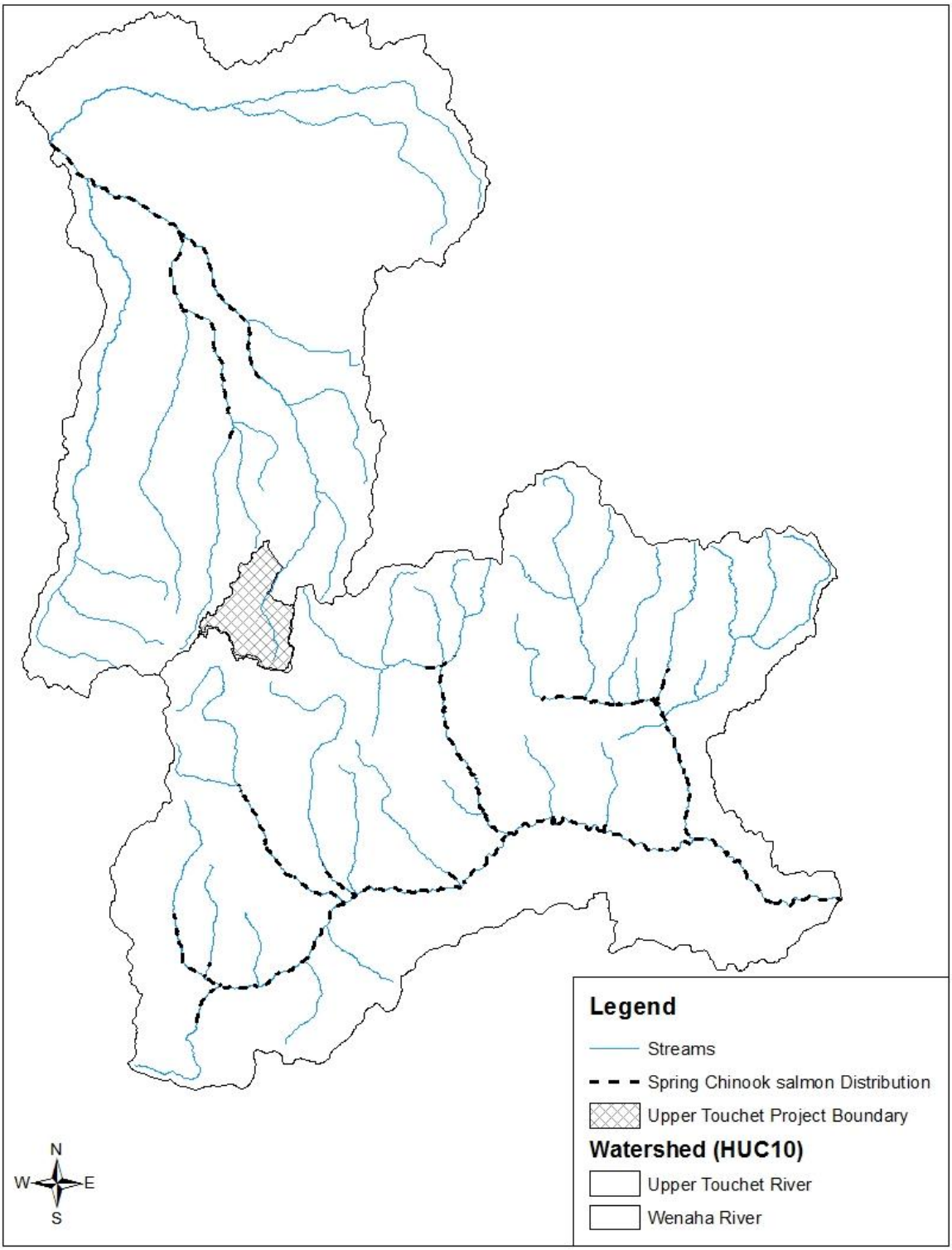

Figure 4. Bull trout distribution within and adjacent to the Upper Touchet Project

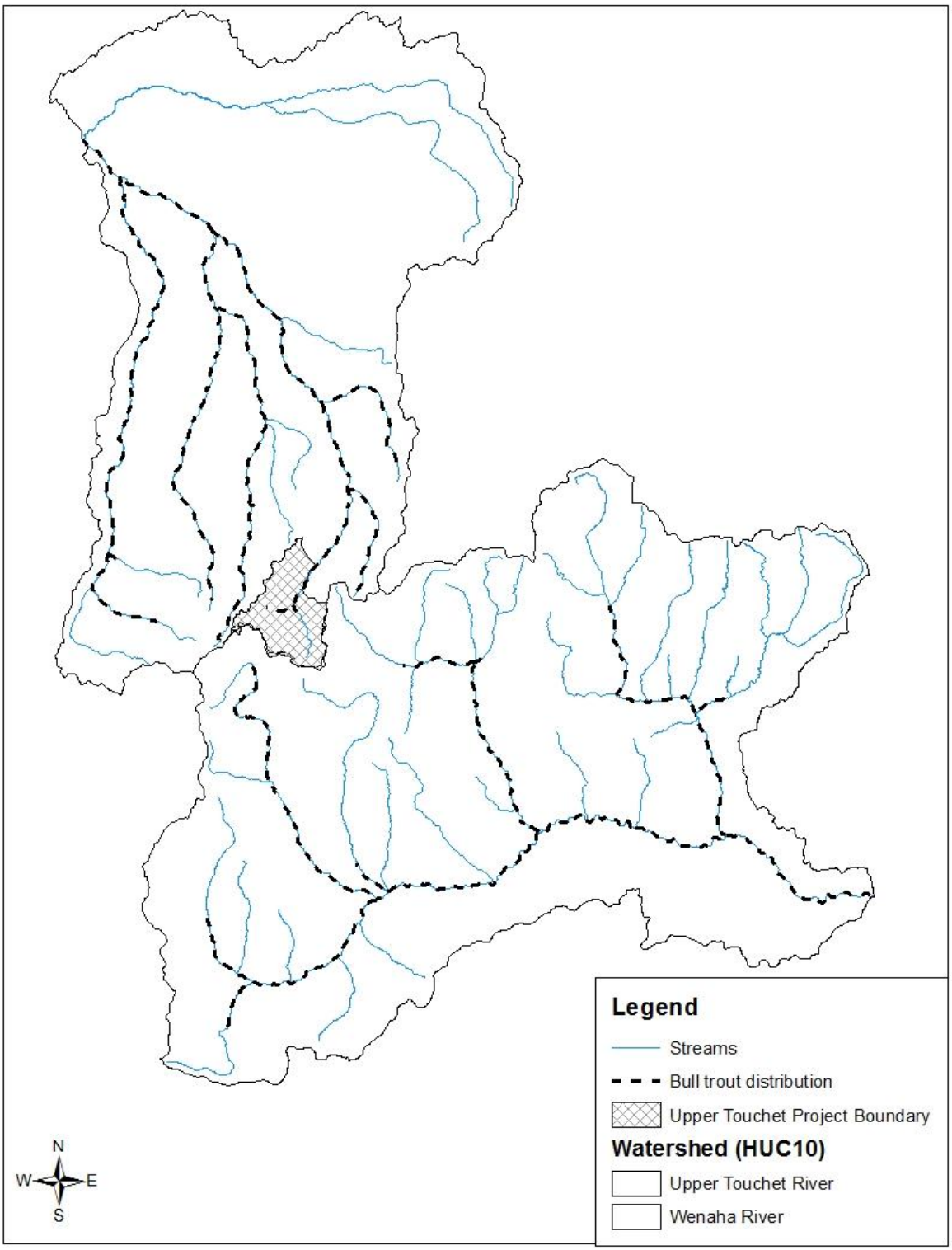

Figure 5. Bull trout Designated Critical Habitat within and adjacent to the Upper Touchet Project

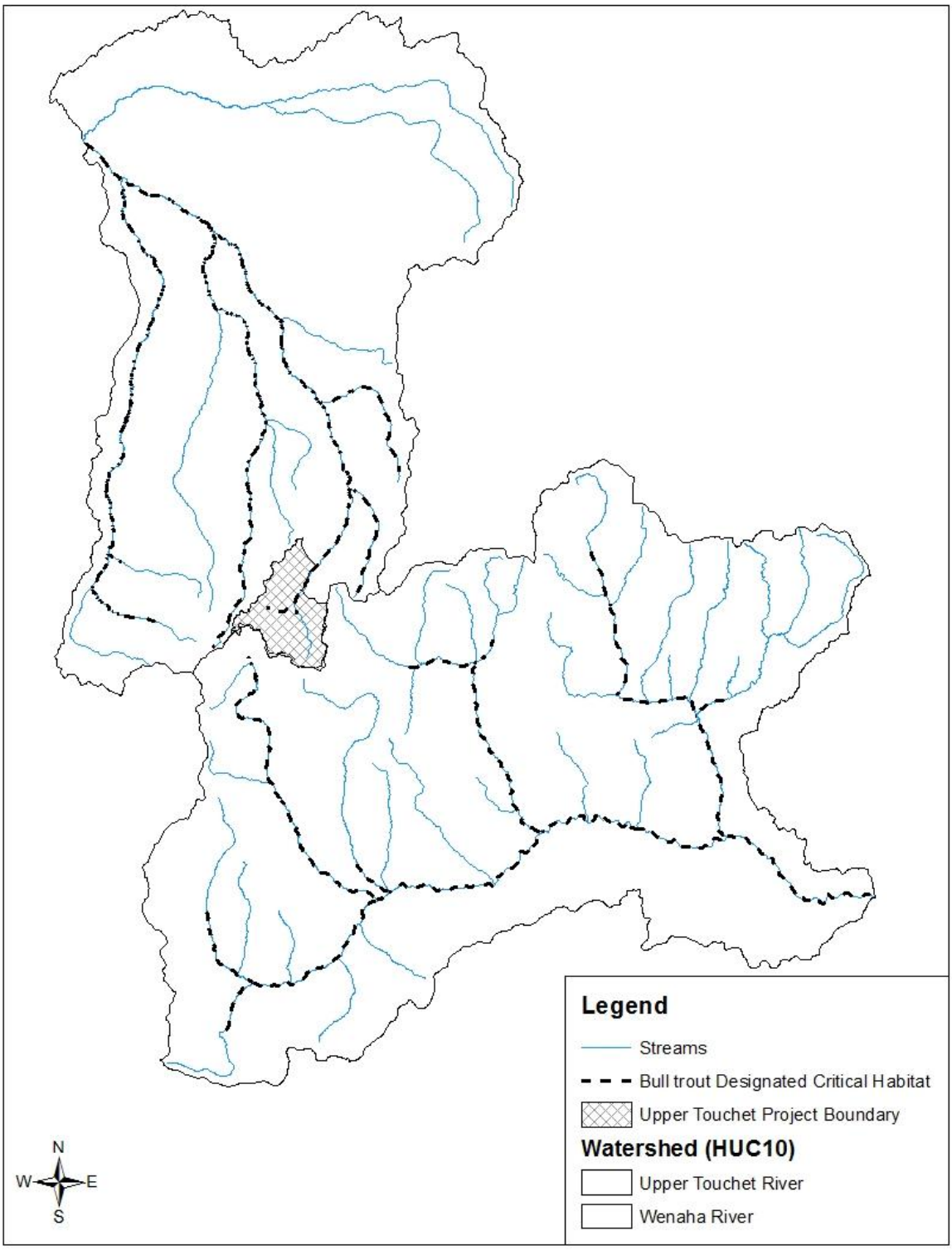

Figure 6. Essential Fish Habitat Boundaries

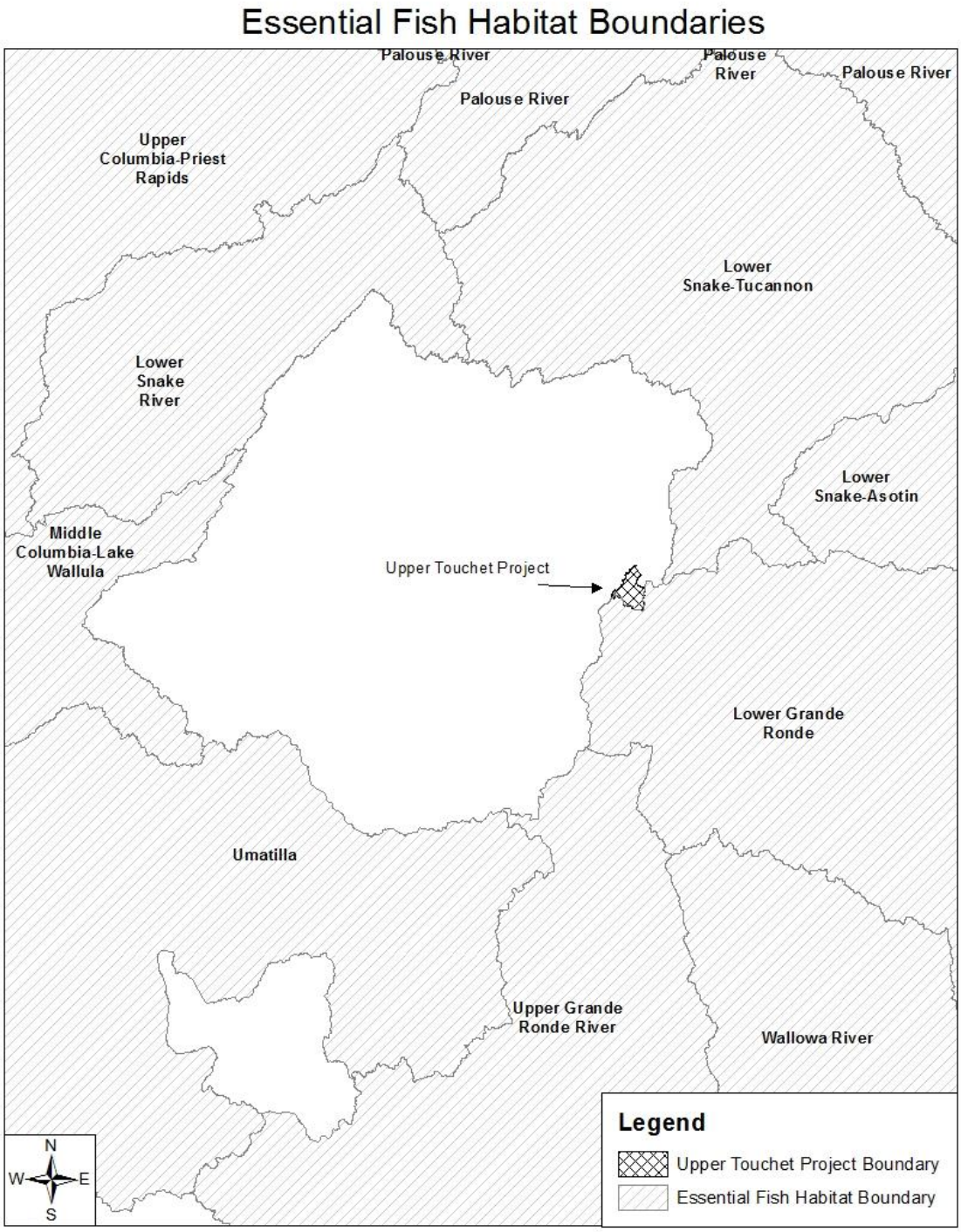

Figure 7. Redband trout distribution within and adjacent to the Upper Touchet Project

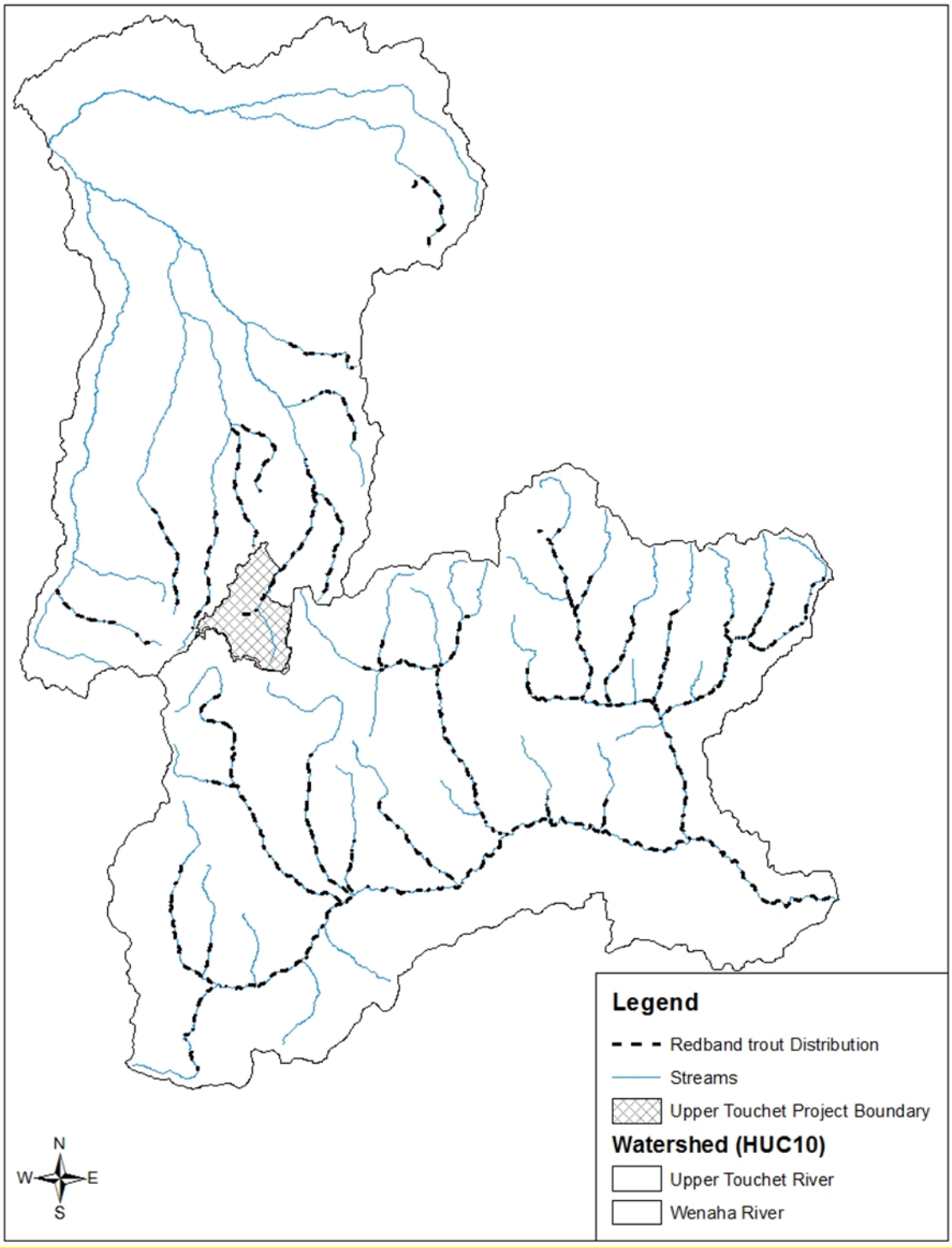

Figure 8. Historical Distribution of Pacific Lamprey

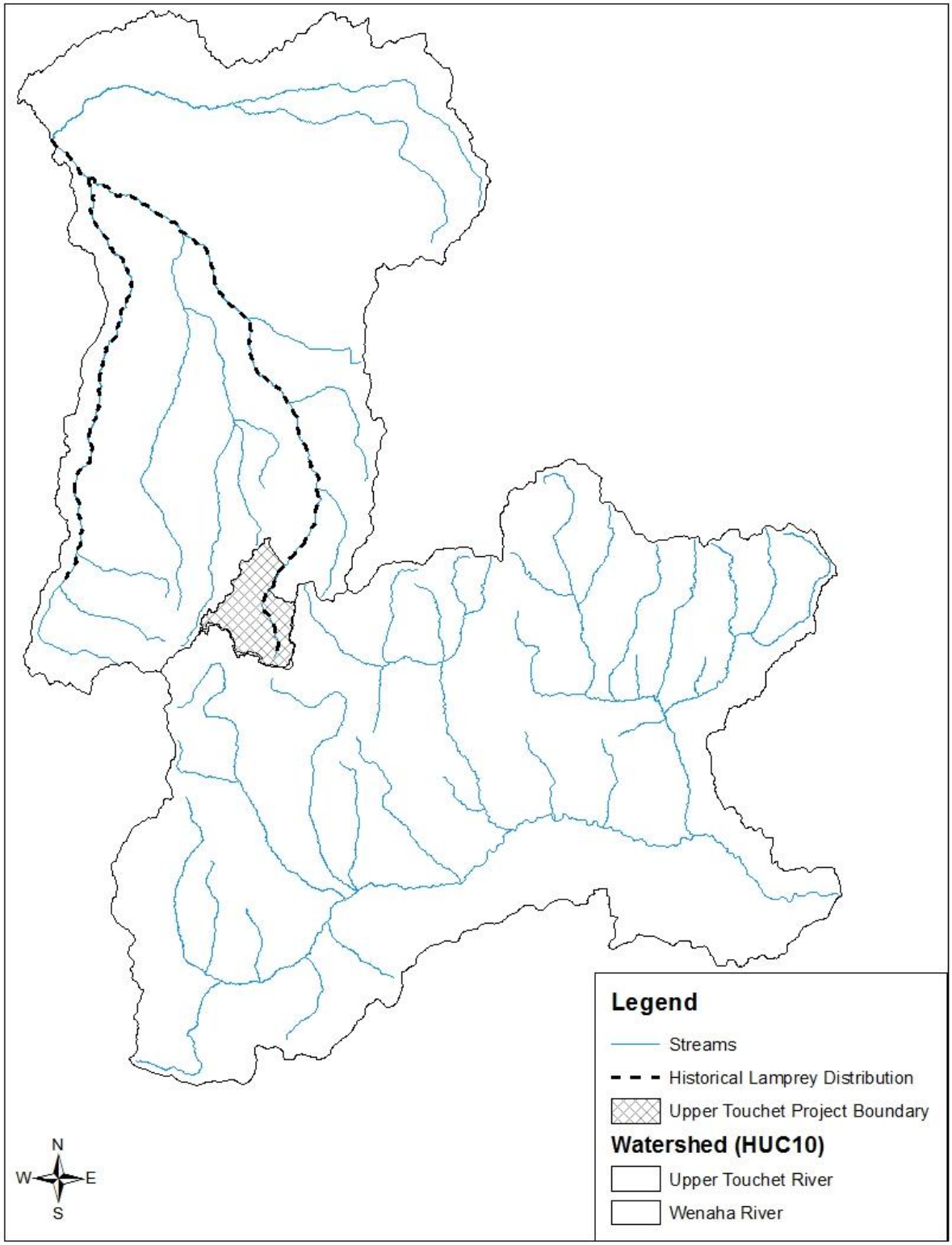

Figure 9. Margined Sculpin Distribution Within and Adjacent to the Upper Touchet Project.